BayRS Version 13.20 Document Change Notice

BayRS Version 13.20
Site Manager Software Version 7.20
BCC Version 4.20

Part No. 300020-D Rev. 00
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NORTEL NETWORKS™

Bay Networks, Inc.
4401 Great America Parkway
Santa Clara, CA 95054

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Preface

This guide describes changes to router software and hardware documentation since BayRS™ Version 13.00. Table 1 of this guide lists the manuals included with Version 13.20, identifies new and revised manuals since Version 13.00, and lists those manuals that we have not revised and which are affected by sections in this document change notice.

Text Conventions

This guide uses the following text conventions:

angle brackets (< >)	Indicate that you choose the text to enter based on the description inside the brackets. Do not type the brackets when entering the command. Example: If the command syntax is: **ping** <*ip_address*>, you enter: **ping 192.32.10.12**
bold text	Indicates command names and options and text that you need to enter. Example: Enter **show ip** {**alerts** | **routes**}. Example: Use the **dinfo** command.
ellipsis points (. . .)	Indicate that you repeat the last element of the command as needed. Example: If the command syntax is: **ethernet/2/1** [<*parameter*> <*value*>] **. . .** , you enter **ethernet/2/1** and as many parameter-value pairs as needed.

italic text	Indicates file and directory names, new terms, book titles, and variables in command syntax descriptions. Where a variable is two or more words, the words are connected by an underscore. Example: If the command syntax is: **show at** <*valid_route*> *valid_route* is one variable and you substitute one value for it.
`screen text`	Indicates system output, for example, prompts and system messages. Example: `Set Bay Networks Trap Monitor Filters`
separator (>)	Shows menu paths. Example: Protocols > IP identifies the IP option on the Protocols menu.
vertical line (|)	Separates choices for command keywords and arguments. Enter only one of the choices. Do not type the vertical line when entering the command. Example: If the command syntax is: **show ip** {**alerts** | **routes**}, you enter either: **show ip alerts** or **show ip routes**, but not both.

Acronyms

This guide uses the following acronyms:

BSC	Binary Synchronous Communication
DNS	domain name server
IP	Internet Protocol
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
L2TP	Layer 2 Tunneling Protocol
LAC	L2TP access concentrator

LAN	local area network
LNS	L2TP network server
MRU	maximum receive unit
MTU	maximum transmission unit
NBNS	NetBIOS name server
NSA	name server address
NVRAM	Nonvolatile RAM
OSPF	Open Shortest Path First
PPP	Point-to-Point Protocol
SNMP	Simple Network Management Protocol
RADIUS	Remote Authentication Dial-In User Service
RAS	remote access server
RIP	Routing Information Protocol
RMON	Remote Monitoring
TCP/IP	Transmission Control Protocol/Internet Protocol
UDP	User Datagram Protocol
VPN	virtual private network
VLAN	virtual LAN
WAN	wide area network

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Valbonne, France	33-4-92-96-69-68
Sydney, Australia	61-2-9927-8800
Tokyo, Japan	81-3-5402-7041

Document Change Notice

Table 1 lists the manuals included in the Version 13.20/7.20 release and those manuals affected by sections in this document.

Table 1. Version 13.20/7.20 Documentation

Document Title	Revised Book for 13.20/7.20	Affected by Section in DCN
BCC Quick Reference	✔	
BCC show Commands for IP Services	✔	
Cable Guide		✔
Configuring and Managing Routers with Site Manager		✔
Configuring and Troubleshooting Bay Dial VPN Networks	✔	
Configuring AppleTalk Services		
Configuring APPN Services		
Configuring ATM DXI Services		
Configuring ATM Half-Bridge Services		
Configuring ATM Services	✔	
Configuring BaySecure FireWall-1	✔	
Configuring BayStack Remote Access		
Configuring Bridging Services	✔	
Configuring BSC Transport Services		✔
Configuring Data Compression Services	✔	

(continued)

Table 1. Version 13.20/7.20 Documentation *(continued)*

Document Title	Revised Book for 13.20/7.20	Affected by Section in DCN
Configuring Data Encryption Services		✔
Configuring DECnet Services		
Configuring Differentiated Services	✔	
Configuring Dial Services		✔
Configuring DLSw Services	✔	
Configuring Ethernet, FDDI, and Token Ring Services		✔
Configuring Frame Relay Services	✔	
Configuring GRE, NAT, RIPSO, and BFE Services	✔	
Configuring Interface and Router Redundancy		✔
Configuring IP, ARP, RIP, and OSPF Services	✔	
Configuring IP Exterior Gateway Protocols (BGP and EGP)	✔	
Configuring IP Multicasting and Multimedia Services	✔	
Configuring IPsec Services	✔	
Configuring IP Utilities		✔
Configuring IPv6 Services		
Configuring IPX Services		
Configuring L2TP Services		✔
Configuring LLC Services	✔	
Configuring LNM Services		
Configuring MPOA Services	✔	
Configuring MPLS Services	✔	
Configuring OSI Services		
Configuring Polled AOT Transport Services		

(continued)

Table 1. Version 13.20/7.20 Documentation *(continued)*

Document Title	Revised Book for 13.20/7.20	Affected by Section in DCN
Configuring PPP Services		✔
Configuring RADIUS	✔	
Configuring RMON and RMON2		✔
Configuring SDLC Services	✔	
Configuring SMDS		
Configuring SNMP, BootP, DHCP, and RARP Services		✔
Configuring Syslog Services		✔☞
Configuring Traffic Filters and Protocol Prioritization		✔
Configuring VINES Services		
Configuring VRRP Services	✔	
Configuring WAN Line Services		✔
Configuring X.25 Gateway Services		
Configuring X.25 Services		
Configuring XNS Services		
Connecting ASN Routers to a Network		
Managing Routers Using the Web Server	✔	
Quick-Starting Routers	✔	
Troubleshooting Routers		
Upgrading Routers to BayRS Version 13.xx		✔
Using Technician Interface Scripts		
Using Technician Interface Software		
Using the Bay Command Console	✔	
Writing Technician Interface Scripts		

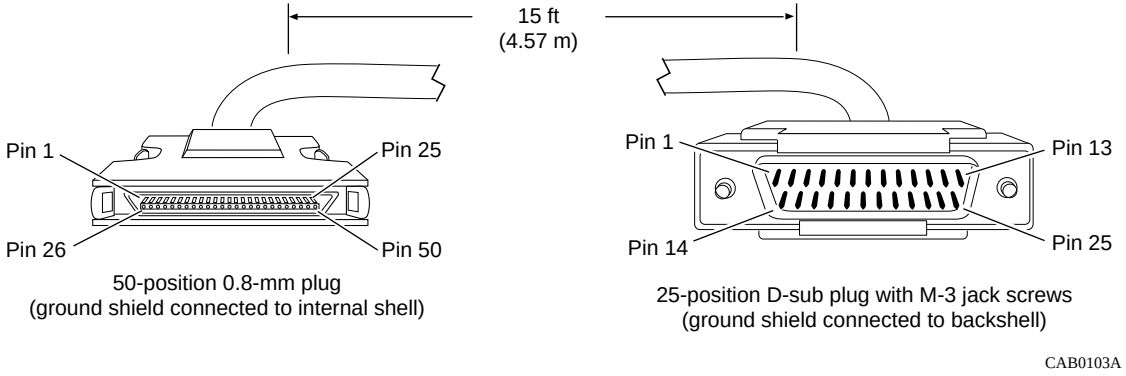
* This information is an addition to the BayRS documentation set. It does not supplement or replace information in any existing document.

Cable Guide

The following sections are additions or amendments to the *Cable Guide*:

- 50-Pin to V.28 Cable (Order No. AA0018023)
- 15-Pin D-Sub to RS-232: Raise DTR (Order No. 7118)
- 15-Pin D-Sub to RS-232: V.25bis (Order No. 7119)
- 15-Pin D-Sub to V.35: V.25bis (Order No. 7120)
- 15-Pin D-Sub to V.35: Raise DTR (Order No. 7121)
- 44-Pin D-Sub to V.35: Raise DTR (Order No. 7137)
- 44-Pin D-Sub to RS-232: Raise DTR (Order No. 7138)
- 44-Pin to V.35M (Order No. 7159)
- RS-232 Pass-Through: 15-Pin to RS-232 (Order No. 7218)
- 44-Pin D-Sub to V.35: Leased Line or V.25bis (Order No. 7220)
- 15-Pin D-Sub to RS-232 (Order No. 7255)
- 15-Pin D-Sub to V.28 (Order No. 7256)
- 44-Pin D-Sub to RS-232: Leased Line or V.25bis (Order No. 7826)
- RS-232 Pass-Through: 44-Pin to RS-232 (Order No. 7833)
- V.35 Pass-Through: 44-Pin to V.35 (Order No. 7834)
- 44-Pin D-Sub to V.28 (Order No. 7837)
- 50-Pin to V.35 (Order No. 7932)
- 50-Pin to V.35: Raise DTR (Order No. 7933)
- 50-Pin to RS-232 (Order No. 7934)
- 50-Pin to RS-232: Raise DTR (Order No. 7935)
- 15-Pin to F RS-232 Synchronous Pass-Through (Order No. 7941)
- 44-Pin to F RS-232 Synchronous Pass-Through (Order No. 7943)
- 44-Pin to F V.35 Synchronous Pass-Through (Order No. 7944)
- 50-Pin to F RS-232 Synchronous Pass-Through (Order No. 7945)
- 50-Pin to F V.35 Synchronous Pass-Through (Order No. 7946)

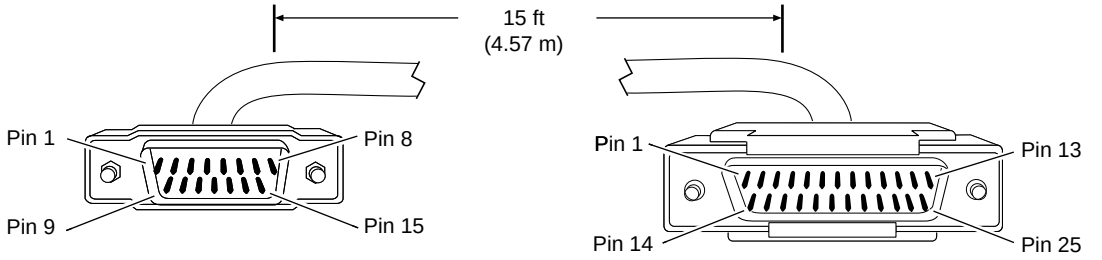
50-Pin to V.28 Cable (Order No. AA0018023)



Industry Interface Type: V.28 (V.10)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send +	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Signal Ground	7	7	Signal Ground
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	8	Data Carrier Detect
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Terminal Timing +	12	24	Terminal Timing
Internal Wire Connections			
Pin 7 > 30 > 31			
Pin 13 > 38			
Pin 14 > 39			

15-Pin D-Sub to RS-232: Raise DTR (Order No. 7118)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

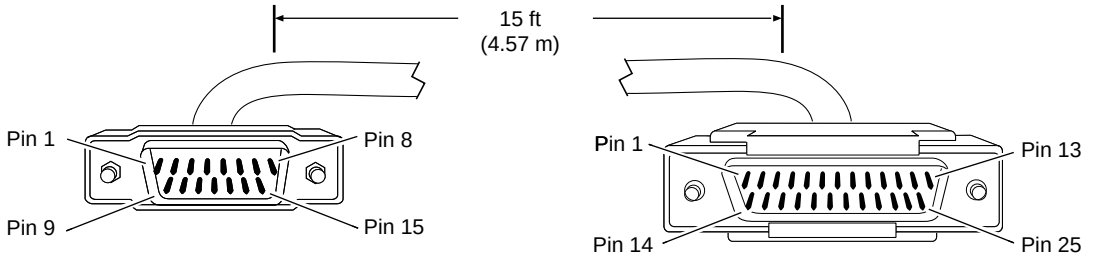
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0005A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	7	Signal Ground
Transmitted Data	2	2	Transmitted Data
Transmitter Signal Element Timing (DTE Source)	3	24	Transmitter Signal Element Timing (DTE Source)
Transmitter Signal Element Timing (DCE Source)	4	15	Transmitter Signal Element Timing (DCE Source)
Request to Send	6	4	Request to Send
Clear to Send	8	6	Data Set Ready
Data Carrier Detect	10	22	Ring Indicator
Receiver Signal Element Timing (DCE Source)	12	17	Receiver Signal Element Timing (DCE Source)
Received Data	14	3	Received Data
Internal Wire Connections			
Pin 1 > 7		Pin 4 > 20 (Data Terminal Ready)	

15-Pin D-Sub to RS-232: V.25bis (Order No. 7119)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

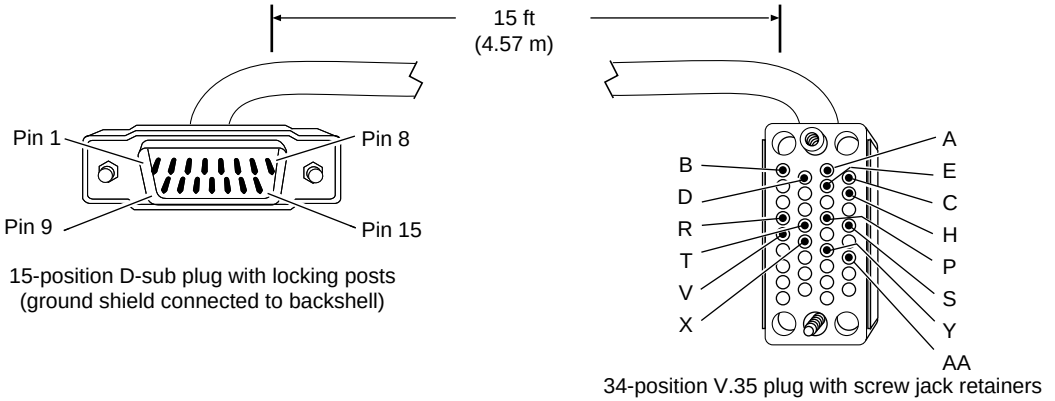
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0006A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	7	Signal Ground
Transmitted Data	2	2	Transmitted Data
Transmitter Signal Element Timing (DTE Source)	3	24	Transmitter Signal Element Timing (DTE Source)
Transmitter Signal Element Timing (DCE Source)	4	15	Transmitter Signal Element Timing (DCE Source)
Request to Send	6	4	Request to Send
Clear to Send	8	5	Clear to Send
Data Carrier Detect	10	6	Data Set Ready
Receiver Signal Element Timing (DCE Source)	12	17	Receiver Signal Element Timing (DCE Source)
Received Data	14	3	Received Data
Internal Wire Connections			
Pin 1 > 7		Pin 4 > 20 (Data Terminal Ready)	

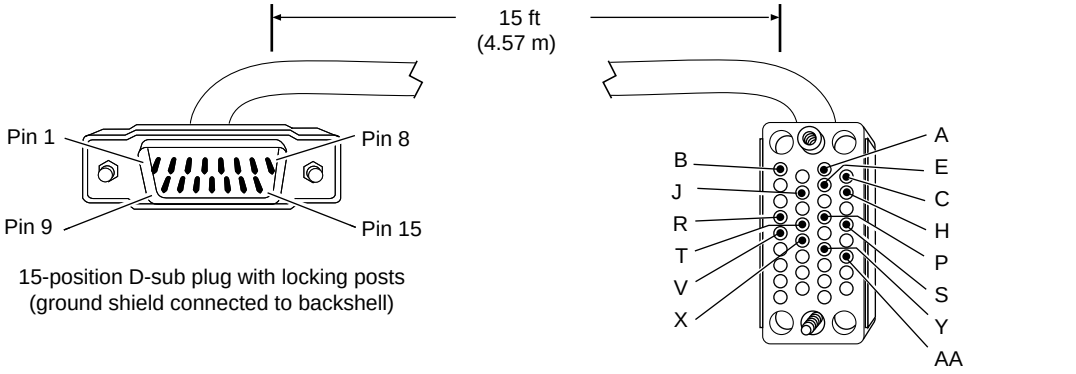
15-Pin D-Sub to V.35: V.25bis (Order No. 7120)



Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	B	Signal Ground
Send Data +	2	P	Send Data A
Send Data -	3	S	Send Data B
Serial Clock Transmit +	4	Y	Send Timing A
Serial Clock Transmit -	5	AA	Send Timing B
Request to Send +	6	C	Request to Send
Clear to Send +	8	D	Clear to Send
Data Carrier Detect +	10	E	Data Set Ready
Serial Clock Receive -	11	X	Receive Timing B
Serial Clock Receive +	12	V	Receive Timing A
Receive Data -	13	T	Receive Data B
Receive Data +	14	R	Receive Data A
Internal Wire Connections			
Pin 1 > 7		Pin C > H (Data Terminal Ready)	

15-Pin D-Sub to V.35: Raise DTR (Order No. 7121)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

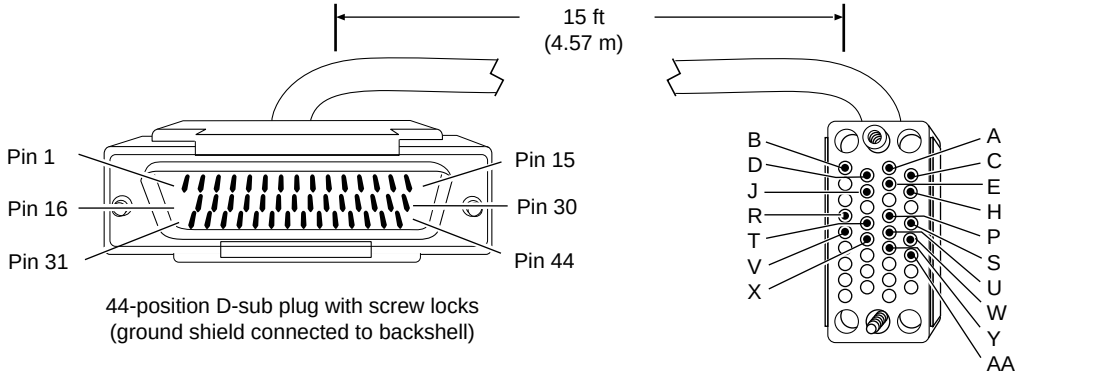
34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

CAB0008A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	B	Signal Ground
Send Data +	2	P	Send Data A
Send Data -	3	S	Send Data B
Serial Clock Transmit +	4	Y	Send Timing A
Serial Clock Transmit -	5	AA	Send Timing B
Request to Send +	6	C	Request to Send
Clear to Send +	8	E	Data Set Ready
Data Carrier Detect +	10	J	Ring Indicator
Serial Clock Receive -	11	X	Receive Timing B
Serial Clock Receive +	12	V	Receive Timing A
Receive Data -	13	T	Receive Data B
Receive Data +	14	R	Receive Data A
Internal Wire Connections			
Pin 1 > 7		Pin C > H (Data Terminal Ready)	

44-Pin D-Sub to V.35: Raise DTR (Order No. 7137)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

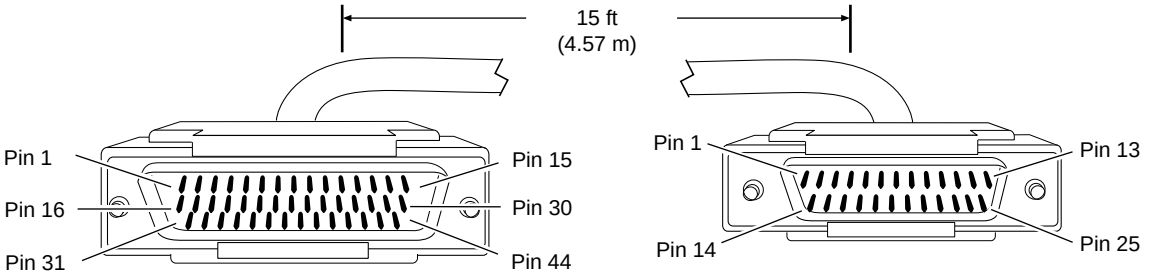
34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

CAB0018A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	A	Frame Ground
Request to Send +	4	C	Request to Send
Clear to Send +	5	D	Clear to Send
Data Set Ready +	6	E	Data Set Ready
Data Terminal Ready +	8	H	Data Terminal Ready
Data Carrier Detect +	9	J	Ring Indicator
VTT +	40	U	Terminal Timing A
VTT -	39	W	Terminal Timing B
Signal Ground	19	B	Signal Ground
VST +	32	Y	Send Timing A
VST -	31	AA	Send Timing B
VRT +	34	V	Receive Timing A
VRT -	33	X	Receive Timing B
VRD +	37	R	Receive Data A
VRD -	35	T	Receive Data B
VSD +	38	P	Send Data A
VSD -	36	S	Send Data B
Internal Wire Connections			
Pin 7 > 19 > 20			
Pin 41 > 42 > 43			
Pin 13 > 28			
Pin 14 > 29			

44-Pin D-Sub to RS-232: Raise DTR (Order No. 7138)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

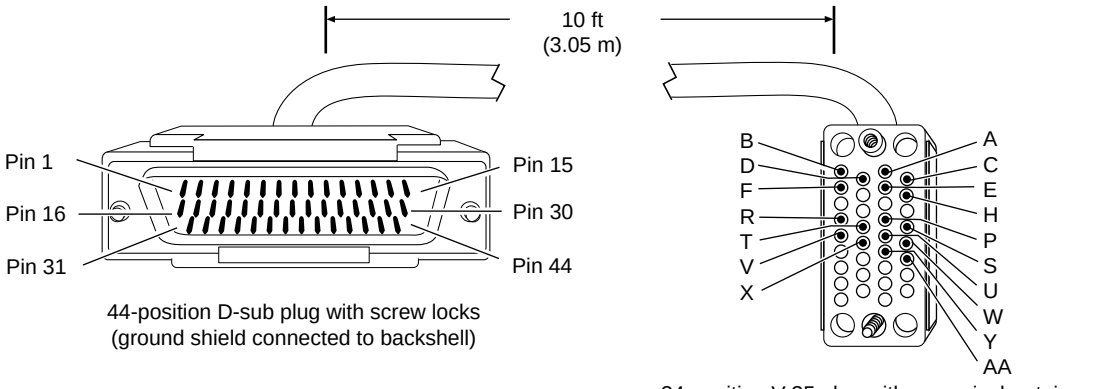
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0019A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send +	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Signal Ground	7	7	Signal Ground
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	22	Ring Indicator
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Transmitter Signal Element Timing +	12	24	Transmitter Signal Element Timing
Internal Wire Connections			
Pin 7 > 19 > 20			
Pin 13 > 28			
Pin 14 > 29			

44-Pin to V.35M (Order No. 7159)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

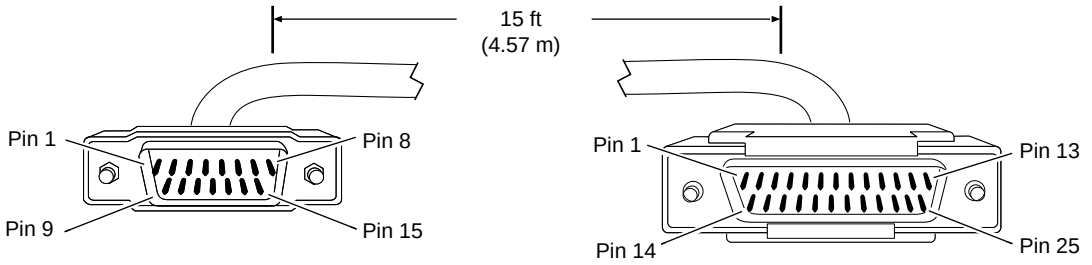
34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

CAB0031B

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	A	Frame Ground
Request to Send +	4	C	Request to Send
Clear to Send +	5	D	Clear to Send
Data Set Ready +	6	E	Data Set Ready
Data Terminal Ready +	8	H	Data Terminal Ready
Data Carrier Detect +	9	F	Data Carrier Detect
VTT +	40	U	Terminal Timing A
VTT -	39	W	Terminal Timing B
Signal Ground	19	B	Signal Ground
VST +	32	Y	Send Timing A
VST -	31	AA	Send Timing B
VRT +	34	V	Receive Timing A
VRT -	33	X	Receive Timing B
VRD +	37	R	Receive Data A
VRD -	35	T	Receive Data B
VSD +	38	P	Send Data A
VSD -	36	S	Send Data B
Internal Wire Connections			
Pin 7 > 19 > 20			
Pin 41 > 42 > 43			
Pin 13 > 28			
Pin 14 > 29			

RS-232 Pass-Through: 15-Pin to RS-232 (Order No. 7218)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

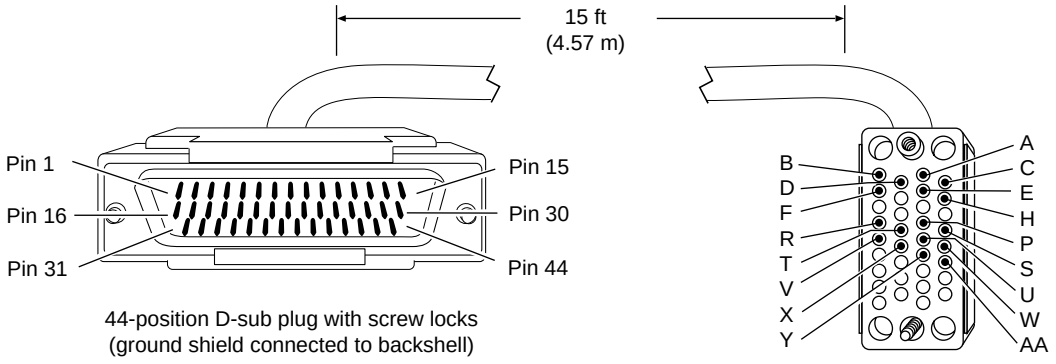
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0041A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	7	Signal Ground
Transmitted Data	2	3	Received Data
Transmit Clock	4	15	Transmit Clock
Data Set Ready	6	8	Data Carrier Detect
Data Carrier Detect	10	4	Clear to Send
Receive Clock	12	17	Receive Clock
Received Data	14	2	Transmitted Data
Internal Wire Connections			
Pin 1 > 7		Pin 4 > 5	
Pin 6 > 8		Pin 6 > 20	
Pin 3 > 4 >12			

44-Pin D-Sub to V.35: Leased Line or V.25bis (Order No. 7220)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

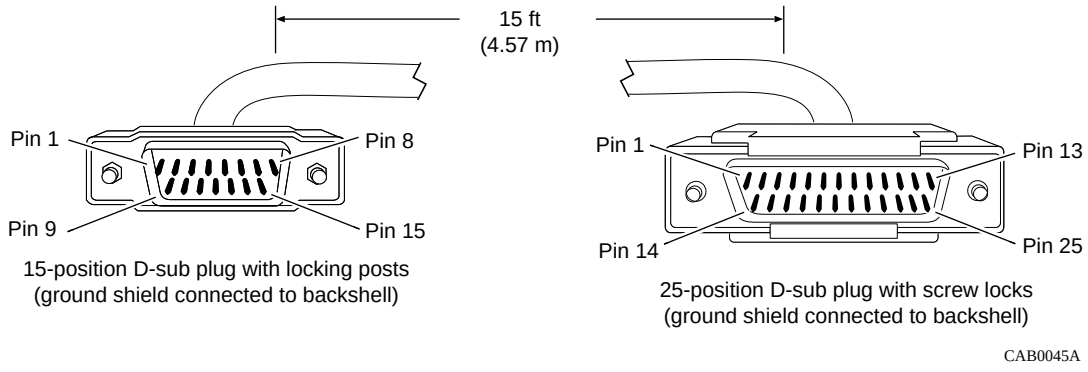
34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

CAB0106A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	38	P	Send Data A
VSD -	36	S	Send Data B
VRT +	34	V	Receive Timing A
VRT -	33	X	Receive Timing B
VST +	32	Y	Send Timing A
VST -	31	AA	Send Timing B
VRD +	37	R	Receive Data A
VRD -	35	T	Receive Data B
Data Set Ready +	6	E	Data Set Ready
Data Terminal Ready +	8	H	Data Terminal Ready
Request to Send +	4	C	Request to Send
Clear to Send +	5	D	Clear to Send
VTT +	40	U	Terminal Timing A
VTT -	39	W	Terminal Timing B
Frame Ground	1	A	Frame Ground
Data Carrier Detect +	9	F	Data Carrier Detect
Signal Ground	19	B	Signal Ground
Internal Wire Connections			
Pin 7 > 19 > 20			
Pin 41 > 42 > 43			
Pin 13 > 28			
Pin 14 > 29			

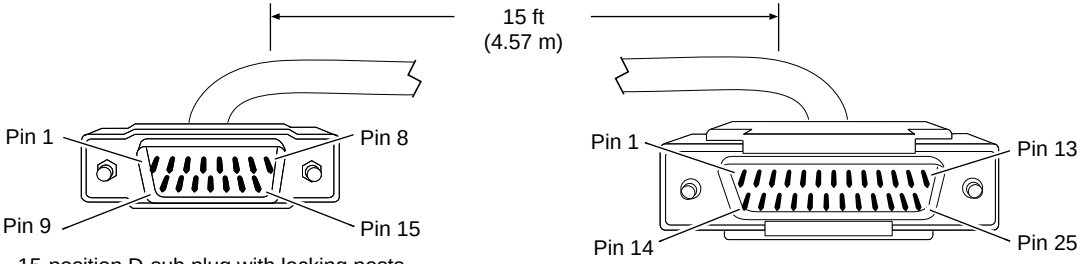
15-Pin D-Sub to RS-232 (Order No. 7255)



Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	7	Signal Ground
Transmitted Data	2	2	Transmitted Data
Transmitter Signal Element Timing (DTE Source)	3	24	Transmitter Signal Element Timing (DTE Source)
Transmitter Signal Element Timing (DCE Source)	4	15	Transmitter Signal Element Timing (DCE Source)
Request to Send	6	4	Request to Send
Clear to Send	8	5	Clear to Send
Carrier Detect	10	8	Carrier Detect
Receiver Signal Element Timing (DCE Source)	12	17	Receiver Signal Element Timing (DCE Source)
Received Data	14	3	Received Data
Data Set Ready	15	6	Data Set Ready
Internal Wire Connections			
Pin 1 > 7		Pin 4 > 20	

15-Pin D-Sub to V.28 (Order No. 7256)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

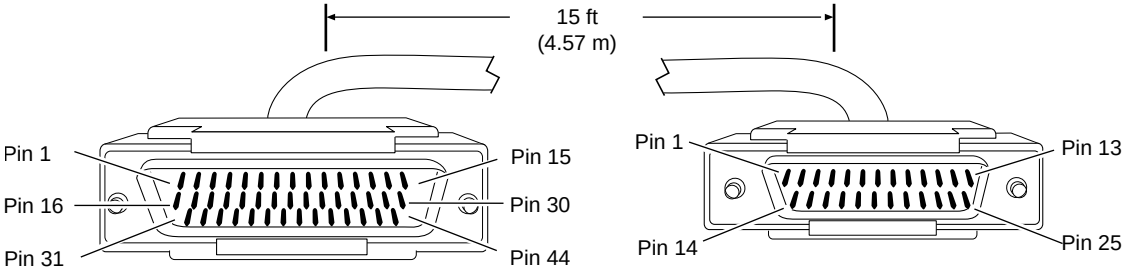
25-position D-sub plug with M-3 jack screws
(ground shield connected to backshell)

CAB0045B

Industry Interface Type: V.28 (V.10)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Signal Ground	1	7	Signal Ground
Transmitted Data	2	2	Transmitted Data
Transmitter Timing (DTE Source)	3	24	Transmitter Signal Element Timing (DTE Source)
Transmitter Signal Element Timing (DCE Source)	4	15	Transmitter Signal Element Timing (DCE Source)
Request to Send	6	4	Request to Send
Clear to Send	8	5	Clear to Send
Carrier Detect	10	8	Carrier Detect
Receiver Signal Element Timing (DCE Source)	12	17	Receiver Signal Element Timing (DCE Source)
Received Data	14	3	Received Data
Data Set Ready	15	6	Data Set Ready
Internal Wire Connections			
Pin 1 > 7		Pin 4 > 20	

44-Pin D-Sub to RS-232: Leased Line or V.25bis (Order No. 7826)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

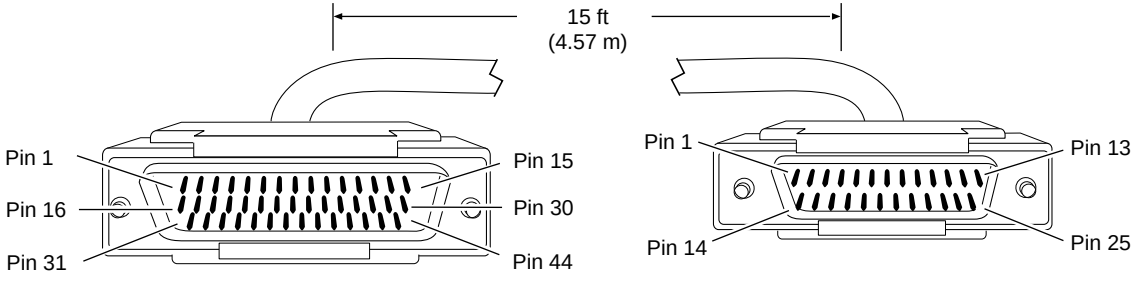
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0069A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**
Signal	**Pin # to Pin #**	**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send +	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	8	Data Carrier Detect
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Transmitter Signal Element Timing +	12	24	Transmitter Signal Element Timing
Signal Ground	7	7	Signal Ground
Internal Wire Connections		
Pin 7 > 19 > 20		
Pin 13 > 28		
Pin 14 > 29		

RS-232 Pass-Through: 44-Pin to RS-232 (Order No. 7833)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

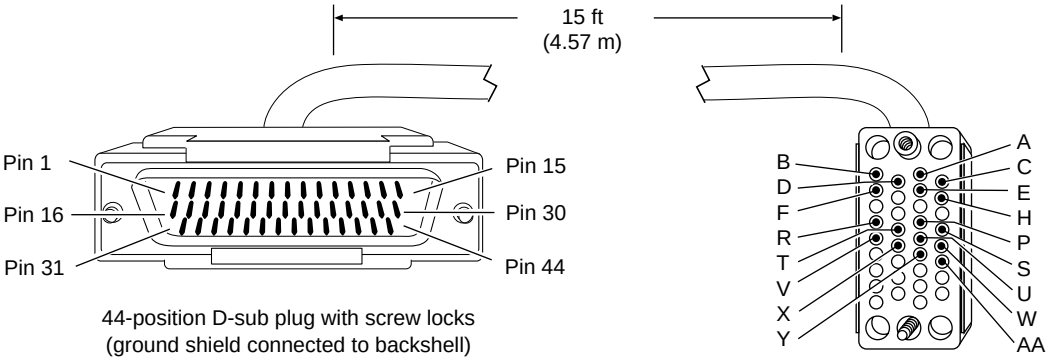
25-position D-sub plug with screw locks
(ground shield connected to backshell)

CAB0065A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Receive Data +	3	2	Send Data
Send Data +	2	3	Receive Data
Data Carrier Detect +	9	5	Clear to Send
RTS +	4	8	Data Carrier Detect
Send Timing +	10	17	Receive Timing
Frame Ground	1	1	Frame Ground
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 4 > 5		Pin 4 > 5	
Pin 10 > 11 > 12		Pin 15 > 17	
Pin 7 > 19 > 20		Pin 6 > 20	
Pin 13 > 28			
Pin 14 > 29			

V.35 Pass-Through: 44-Pin to V.35 (Order No. 7834)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

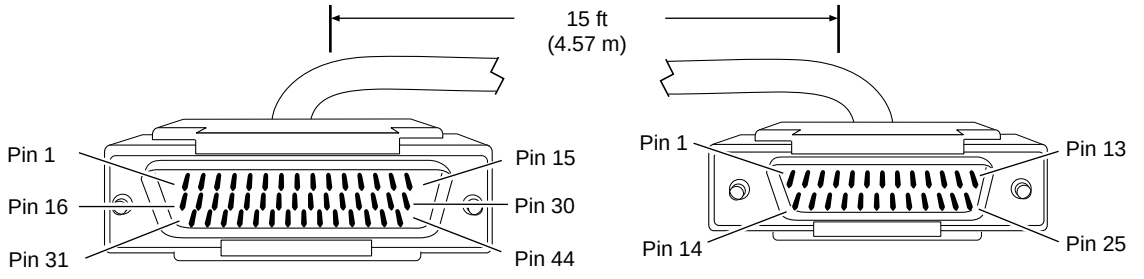
34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

CAB0106A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	38	R	Receive Data A
VSD -	36	T	Receive Data B
VRD +	37	P	Send Data A
VRD -	35	S	Send Data B
Request to Send +	4	F	Data Carrier Detect
Data Carrier Detect +	9	D	Clear to Send
VTT +	40	V	Receive Timing A
VTT -	39	X	Receive Timing B
Frame Ground	1	A	Frame Ground
Signal Ground	7	B	Signal Ground
Internal Wire Connections			
Pin 4 > 5		Pin C > D	
Pin 32 > 34 > 40		Pin V > Y	
Pin 31 > 33 > 39		Pin X > AA	
Pin 7 > 19 > 20 > 41 > 42		Pin E > H	
Pin 13 > 28			
Pin 14 > 29			

44-Pin D-Sub to V.28 (Order No. 7837)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

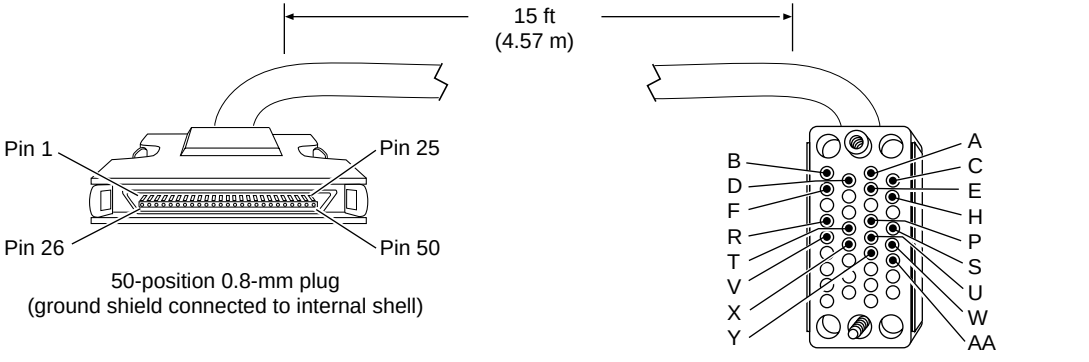
25-position D-sub plug with M-3 jack screws
(ground shield connected to backshell)

CAB0069B

Industry Interface Type: V.28 (V.10)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send +	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	8	Data Carrier Detect
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Transmitter Signal Element Timing +	12	24	Transmitter Signal Element Timing
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 7 > 19 > 20			
Pin 13 > 28			
Pin 14 > 29			

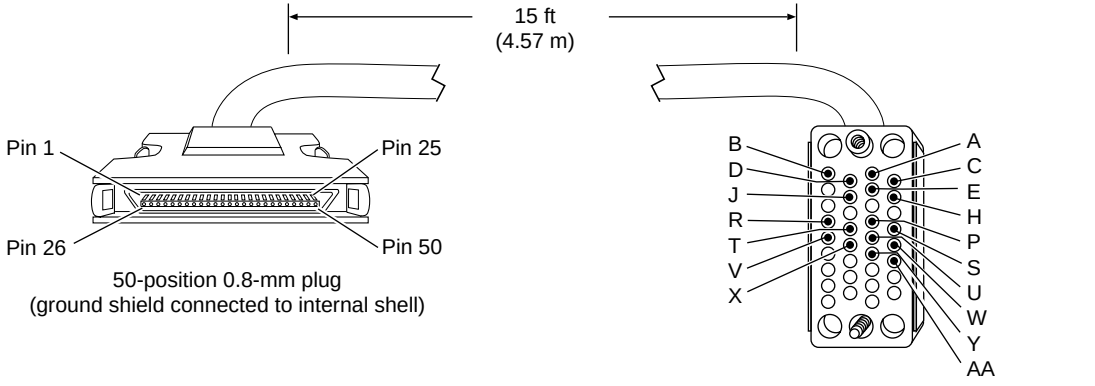
50-Pin to V.35 (Order No. 7932)



Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	44	P	Send Data A
VSD -	19	S	Send Data B
VRT +	42	V	Receive Timing A
VRT -	17	X	Receive Timing B
VST +	41	Y	Send Timing A
VST -	16	AA	Send Timing B
VRD +	43	R	Receive Data A
VRD -	18	T	Receive Data B
Data Set Ready +	6	E	Data Set Ready
Data Terminal Ready +	8	H	Data Terminal Ready
Request to Send +	4	C	Request to Send
Clear to Send +	5	D	Clear to Send
VTT +	45	U	Terminal Timing A
VTT -	20	W	Terminal Timing B
Frame Ground	1	A	Frame Ground
Data Carrier Detect	9	F	Data Carrier Detect
Signal Ground	30	B	Signal Ground
Internal Wire Connections			
Pin 7 > 30 > 31			
Pin 46 > 47 > 48			
Pin 13 > 38			
Pin 14 > 39			

50-Pin to V.35: Raise DTR (Order No. 7933)



50-position 0.8-mm plug
(ground shield connected to internal shell)

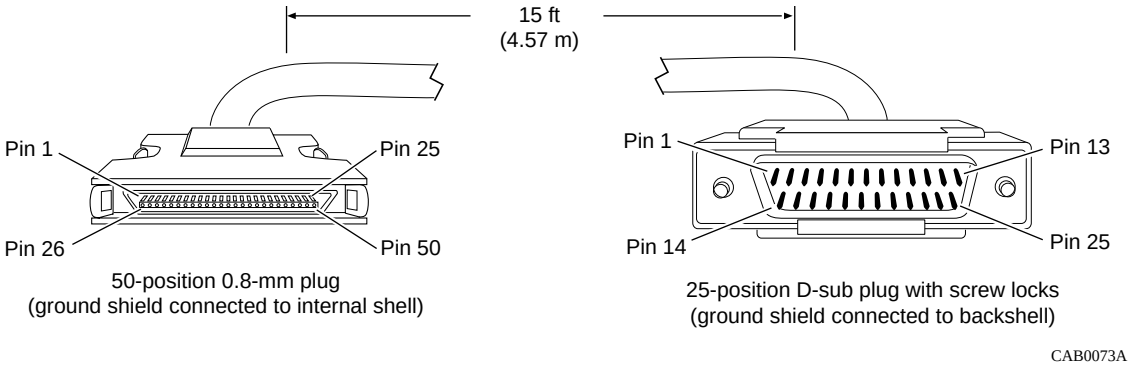
34-position V.35 plug with screw jack retainers
(ground shield connected to backshell)

CAB0071A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	44	P	Send Data A
VSD -	19	S	Send Data B
VRT +	42	V	Receive Timing A
VRT -	17	X	Receive Timing B
VST +	41	Y	Send Timing A
VST -	16	AA	Send Timing B
VRD +	43	R	Receive Data A
VRD -	18	T	Receive Data B
Data Set Ready +	6	E	Data Set Ready
Data Terminal Ready +	8	H	Data Terminal Ready
Request to Send +	4	C	Request to Send
Clear to Send +	5	D	Clear to Send
VTT +	45	U	Terminal Timing A
VTT -	20	W	Terminal Timing B
Frame Ground	1	A	Frame Ground
Data Carrier Detect +	9	J	Ring Indicator
Signal Ground	30	B	Signal Ground
Internal Wire Connections			
Pin 7 > 30 > 31			
Pin 46 > 47 > 48			
Pin 13 > 38			
Pin 14 > 39			

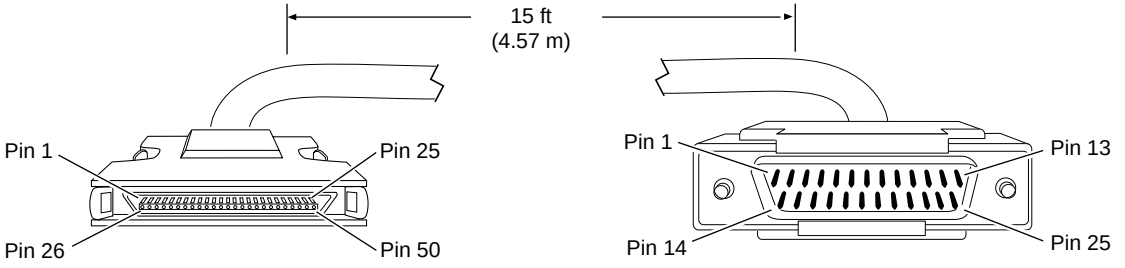
50-Pin to RS-232 (Order No. 7934)



Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send +	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Signal Ground	7	7	Signal Ground
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	8	Data Carrier Detect
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Terminal Timing +	12	24	Terminal Timing
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 7 > 30 > 31			
Pin 13 > 38			
Pin 14 > 39			

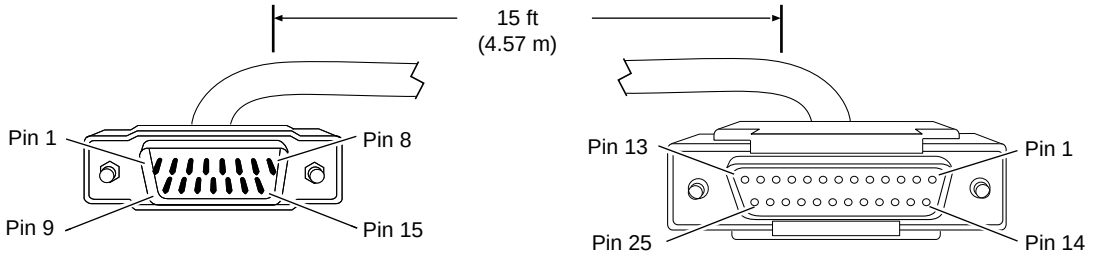
50-Pin to RS-232: Raise DTR (Order No. 7935)



Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Frame Ground	1	1	Frame Ground
Send Data +	2	2	Send Data
Receive Data +	3	3	Receive Data
Request to Send +	4	4	Request to Send
Clear to Send +	5	5	Clear to Send
Data Set Ready +	6	6	Data Set Ready
Data Terminal Ready +	8	20	Data Terminal Ready
Data Carrier Detect +	9	22	Ring Indicator
Send Timing +	10	15	Send Timing
Receive Timing +	11	17	Receive Timing
Terminal Timing +	12	24	Terminal Timing
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 7 > 30 > 31			
Pin 13 > 38			
Pin 14 > 39			

15-Pin to F RS-232 Synchronous Pass-Through (Order No. 7941)



15-position D-sub plug with locking posts
(ground shield connected to backshell)

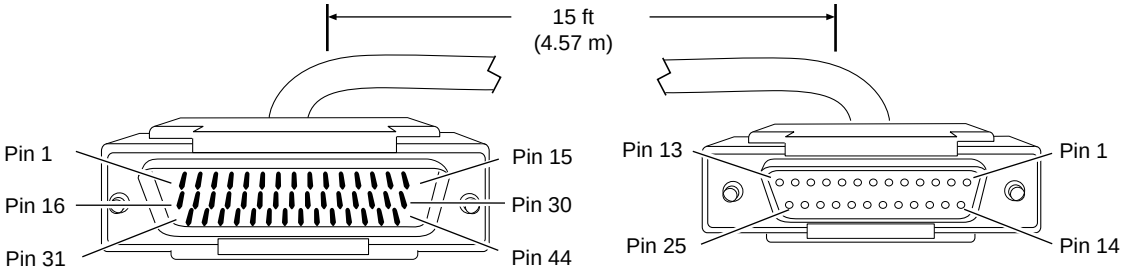
25-position D-sub receptacle with screw locks
(ground shield connected to backshell)

CAB0079A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Transmit Data	2	3	Receive Data
Receive Data	14	2	Transmit Data
Request to Send	6	8	Data Carrier Detect
Data Carrier Detect	10	4	Request to Send
Transmit Clock	4	15	Transmit Clock
Signal Ground	1	7	Signal Ground
Internal Wire Connections			
Pin 6 > 8		Pin 4 > 5	
Pin 3 > 4 > 12		Pin 15 > 17	
Pin 1 > 7		Pin 6 > 20	

44-Pin to F RS-232 Synchronous Pass-Through (Order No. 7943)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

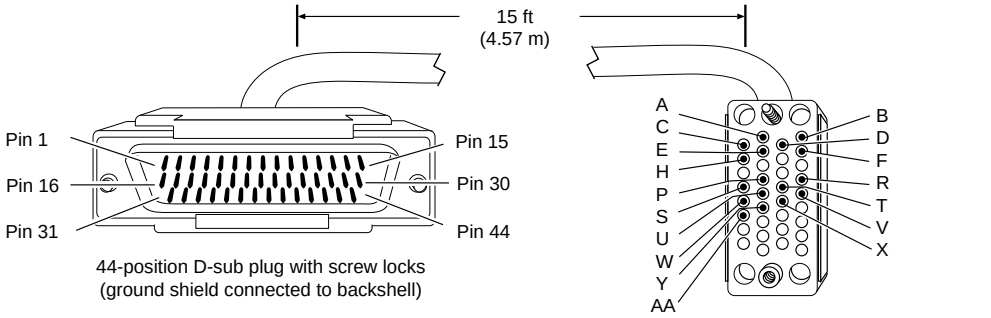
25-position D-sub receptacle with screw locks
(ground shield connected to backshell)

CAB0081A

Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	3	Receive Data
Receive Data +	3	2	Send Data
Request to Send +	4	8	Data Carrier Detect
Data Carrier Detect +	9	4	Request to Send
Send Timing +	10	15	Send Timing
Frame Ground	1	1	Frame Ground
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 4 > 5		Pin 4 > 5	
Pin 10 > 11 > 12		Pin 15 > 17	
Pin 13 > 28		Pin 6 > 20	
Pin 14 > 29			
Pin 7 > 19 > 20			

44-Pin to F V.35 Synchronous Pass-Through (Order No. 7944)



44-position D-sub plug with screw locks
(ground shield connected to backshell)

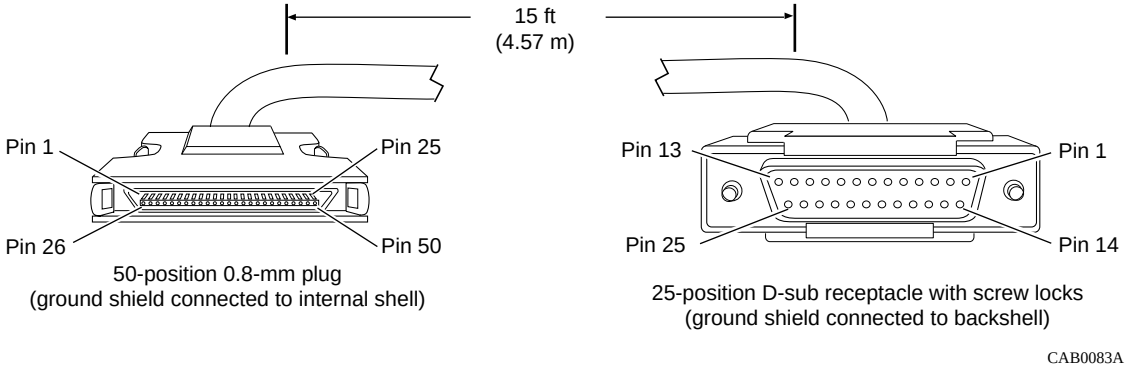
34-position V.35 receptacle with screw jack retainers
(ground shield connected to backshell)

CAB0082A

Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	38	R	Receive Data A
VSD -	36	T	Receive Data B
VRD +	37	P	Send Data A
VRD -	35	S	Send Data B
Request to Send +	4	F	Data Carrier Detect
Data Carrier Detect +	9	C	Request to Send
VTT +	40	Y	Send Timing A
VTT -	39	AA	Send Timing B
Frame Ground	1	A	Frame Ground
Signal Ground	7	B	Signal Ground
Internal Wire Connections			
Pin 4 > 5		Pin C > D	
Pin 32 > 34 > 40		Pin V > Y	
Pin 31 > 33 > 39		Pin X > AA	
Pin 13 > 28		Pin E > H	
Pin 14 > 29			
Pin 7 > 19 > 20 > 41 > 42			

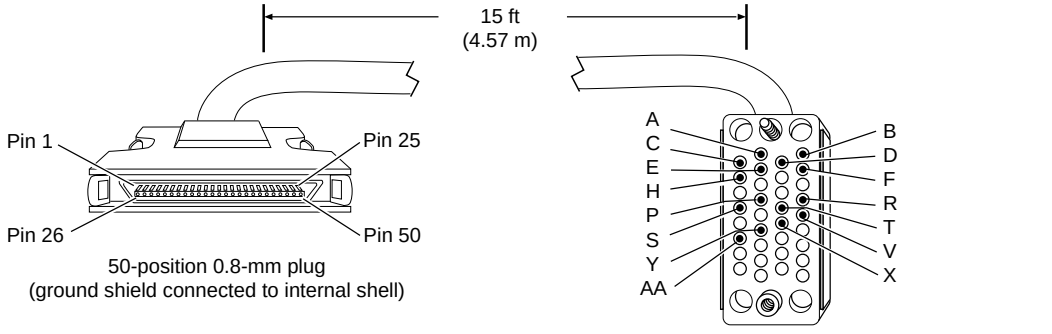
50-Pin to F RS-232 Synchronous Pass-Through (Order No. 7945)



Industry Interface Type: RS-232-C

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
Send Data +	2	3	Receive Data
Receive Data +	3	2	Send Data
Request to Send +	4	8	Data Carrier Detect
Data Carrier Detect +	9	4	Request to Send
Send Timing +	10	15	Send Timing
Frame Ground	1	1	Frame Ground
Signal Ground	7	7	Signal Ground
Internal Wire Connections			
Pin 4 > 5		Pin 4 > 5	
Pin 10 > 11 > 12		Pin 15 > 17	
Pin 13 > 38		Pin 6 > 20	
Pin 14 > 39			
Pin 7 > 30 > 31			

50-Pin to F V.35 Synchronous Pass-Through (Order No. 7946)



Industry Interface Type: V.35 (V.10 and V.11)

Bay Networks Termination		**Remote Termination**	
Signal	**Pin # to Pin #**		**Signal**
VSD +	44	R	Receive Data A
VSD -	19	T	Receive Data B
VRD +	43	P	Send Data A
VRD -	18	S	Send Data B
Request to Send +	4	F	Data Carrier Detect
Data Carrier Detect +	9	D	Clear to Send
VTT +	45	Y	Send Timing A
VTT -	20	AA	Send Timing B
Frame Ground	1	A	Frame Ground
Signal Ground	7	B	Signal Ground
Internal Wire Connections			
Pin 4 > 5		Pin C > D	
Pin 41 > 42 > 45		Pin V > Y	
Pin 16 > 17 > 20		Pin X > AA	
Pin 13 > 38		Pin E > H	
Pin 14 > 39			
Pin 7 > 30 > 31 > 46 > 47			

Configuring and Managing Routers with Site Manager

The following sections are additions to *Configuring and Managing Routers with Site Manager.*

Reallocating Memory Partitions for a Processor Module

Using the Site Manager Kernel Configuration tool, you can reallocate global and local memory for the following routers and processor modules:

- AN -- The AN router contains a single processor module.
- ANH -- The ANH router contains a single processor module.
- ASN -- The ASN router contains a single processor module.
- FRE-2 -- The FRE-2 processor module is used in the BLN, BLN-2, and BCN routers.

You cannot reallocate memory partitions for the FRE-4-PPC processor module used in BLN, BLN-2, and BCN routers. If you use the Site Manager Kernel Configuration tool for the FRE-4-PPC processor module it will display global and local memory.

Partitioning Overview

Router processor modules use three types of memory:

- Global
- Local
- Nonvolatile RAM (NVRAM)

Global and local memory are separate partitions of a single, contiguous memory address space. The RAM chips associated with this address space exist physically on each processor module.

The NVRAM for each processor module stores the memory partitioning configuration associated with that module. You cannot partition NVRAM.

NVRAM is preset on each FRE-2 processor module inside the router. If you move a FRE-2 module to another slot in the router, the memory partitioning configuration moves with the module to the new slot.

You can specify the amount of local and global memory (that is, the size of the local and global memory partitions) used by a given processor module. Increasing the size of the global memory partition automatically decreases the size of the local memory partition. The router software ensures that the sum of local and global memory always equals the total amount of memory available on a given processor module.

Repartitioning Global and Local Memory (AN, ANH, ASN, and FRE-2)

Caution: Change memory partitioning only at the recommendation of, or under the direction of, the Bay Networks Technical Solutions Center. Under normal router and network operating conditions, there is no need to modify the default memory partitions established for a processor module. You reallocate processor memory partitions in rare instances, and only for the purpose of network troubleshooting.

To repartition global and local memory:

1. **Connect to the router.**

   Refer to Chapter 1 of *Configuring and Managing Routers with Site Manager.* for instructions.

2. **In the main Site Manager window, choose Administration > Kernel Configuration.**

   The Kernel Configuration window opens (Figure 1).

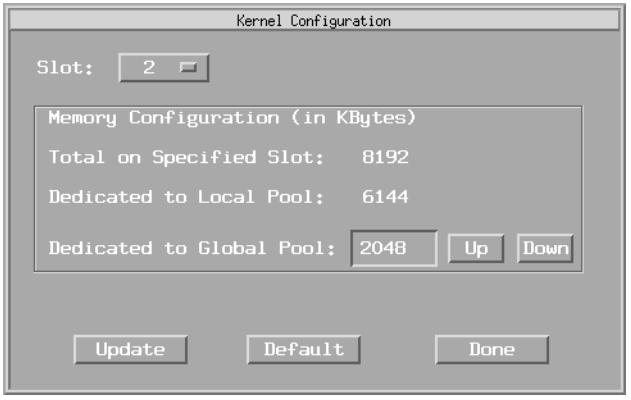


Figure 1. Kernel Configuration Window (AN, ANH, ASN, and FRE-2)

If the router you are configuring is not an AN, ANH, or ASN, or if the router does not contain a FRE-2 processor module, a window opens with the following message:

```
No valid modules were found
```

The message also means that the processor modules found in the currently connected router are not user-configurable, for example, when the Kernel Configuration routine finds only FRE modules in the currently connected router.

The Kernel Configuration window displays the following information (Table 2).

Table 2. Kernel Configuration Window Information

Memory Configuration Information	Description
Total memory on the specified slot	Total memory displayed depends on the type of processor module.
Memory dedicated to the local pool	Local pool refers to the memory used to manage the router. For example, it contains the statistics, event log, bootable image, and configuration file, along with the routes that IP learned.
Memory dedicated to the global pool	Global pool refers to the memory dedicated for message buffers.

3. **Select the processor module slot that requires memory repartitioning.**
4. **Enter an amount in the Dedicated to Global Pool field.**

   To add more memory to the global pool, click on Up until the desired amount of memory appears, or type a value in the Dedicated to Global Pool field. As you increase the amount of global memory, you decrease the amount of local memory proportionally.

   To add more memory to the local pool, click on Down until the desired amount of memory appears, or type a value in the field.

5. **Click on Update to restart the slot with the new values.**

   A confirmation window prompts:

   ```
   Restart slot?
   ```

To reset the memory allocation to the factory-default values, click on Default instead of Update. A message then prompts you to confirm your decision to reset the values.

6. **Click on Done to restart the processor module located in that slot.**

   You return to the main Site Manager window.

   Site Manager stores the new configuration in NVRAM and restarts the module (FRE-2) or router (AN, ANH, or ASN). This store-and-restart process takes about 10 seconds to complete.

7. **Repeat steps 2 through 6 to reallocate memory partitioning on a different processor module, if applicable.**

   Repeat steps 1 through 6 to reallocate memory partitioning for a module in a different router.

8. **Click on Done.**

Displaying Global and Local Memory (FRE-4-PPC Processor Modules Only)

To display global and local memory:

1. **Connect to the router.**

   Refer to *Configuring and Managing Routers with Site Manager.* for instructions.

2. **In the main Site Manager window, choose Administration > Kernel Configuration.**

   The Kernel Configuration window opens (Figure 2).

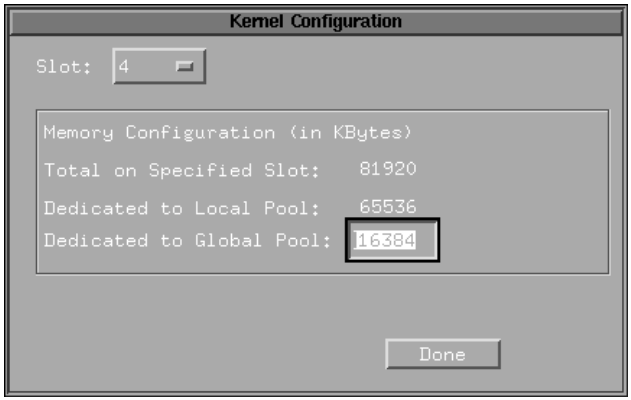


Figure 2. Kernel Configuration Window (FRE-4-PPC)

If the router you are configuring does not contain a FRE-4-PPC processor module, a window opens with the following message:

```
No valid modules were found
```

The Kernel Configuration window displays the information listed in Table 2.

3. **Select the processor module slot that requires memory display.**

   The memory configuration will display as shown in Figure 2.

4. **Repeat steps 2 through 5 to display memory on a different processor module, if applicable.**

   Repeat steps 1 through 5 to display memory for a FRE-4-PPC module in a different router.

5. **Click on Done.**

Configuring BSC Transport Services

The following information is an amendment to “Preparing a Configuration File” in Chapter 1 of *Configuring BSC Transport Services*

You can configure BSC transport services on any COM port, not just COM1 and COM2.

Configuring Data Encryption Services

The following sections are amendments to *Configuring Data Encryption Services*.

Replace “Configuring Encryption with Dial Backup” in Chapter 2 of *Configuring Data Encryption Services* with the following section, “Using Encryption with Dial Services.”

Using Encryption with Dial Services

You can configure WEP to work with dial-on-demand, dial backup, and bandwidth-on-demand services. Using WEP for these three dial services enables you to protect sensitive traffic across switched circuits.

Configure encryption for a PPP or frame relay switched circuit as you would for a leased circuit.

Encryption with Dial Backup

If you configure encryption to work with dial backup service, encrypted data travels over the backup circuit if the primary line fails. You do not have to configure WEP over the backup circuit, because the backup circuit takes the configuration of the primary circuit. Encryption works with any PPP or frame relay primary and backup circuit combination.

If PPP is the protocol for the backup circuit, ensure that the parameter RFC1661 Compliance (Site Manager) or **mru-compliance** (BCC) is set to the default, Enable, for encryption to work successfully.

To configure RFC 1661 compliance with Site Manager, see *Configuring PPP Services*. To configure RFC 1661 compliance with the BCC, see *Configuring Dial Services*.

Configuring Dial Services

The following sections are additions to *Configuring Dial Services*.

RADIUS Authentication Services Using VSA

RADIUS clients must have some way to authenticate routers that call. For RADIUS clients that use a dial service, you identify remote callers by configuring vendor-specific attributes (VSA) on the RADIUS server. These attributes identify the router and enable you to store customized profiles for that router. For more information on VSAs, refer to Requests for Comments (RFC) 2138 and 2139.

The fields within the VSA attribute identify this router's vendor and set restrictions or enable certain privileges. The Bay Networks ID is 1584.

The only required VSA is **Annex-Local-IP-Address**, which specifies the IP address of the local port. This VSA must match the IP address of the interface receiving the call.

When a call comes in that needs authentication, the RADIUS client first checks the router's caller resolution table for an entry that identifies the caller.

- If the caller is authorized, the local router maps the caller to a local circuit, and then activates that circuit.
- If that fails, and RADIUS is configured, a request is sent to the RADIUS server for authentication.

Note: Do not configure the router on the caller resolution table. If you do, the RADIUS client will not access the vendor-specific attributes.

Creating an Incoming Phone List (ISDN Only)

Prior to Version 13.20, you could configure an incoming phone list with Site Manager only. Now you can also use the BCC.

Using the BCC

To configure an incoming phone list, navigate to the `isdn-in-phone-list` prompt by entering:

isdn-in-phone-list

To add a phone number to the incoming phone list, enter:

in-phone-number <*number*>

number is the numeric string representing the incoming phone number.

For example:

`isdn-in-phone-list#` **in-phone-number 1234566**

After you configure a phone number, you can specify a circuit name. This command is optional unless you want to use the callback feature; the BCC needs a circuit name to support callback functionality.

To add a phone number and configure a circuit name, navigate to the `isdn-in-phone-list` prompt and enter:

in-phone-number <*number*> **circuit-name** <*name*>

number is the numeric string representing the incoming phone number.
name is the name of the local circuit that corresponds to this incoming phone number.

For example, to add 1234567 from the Boston circuit to the incoming phone list, enter:

`isdn-in-phone-list#` **in-phone-number 1234567 circuit-name to-Boston**

After you configure a phone number, you can enable call screening. This command is optional.

To enable call screening at a specific number, navigate to the `in-phone-number` prompt for that number and enter:

cwc

For example, to enable call screening for number 1234567, enter:

`in-phone-number/1234567#` **cwc**

Then you have to enable call filtering.

To enable incoming call filtering, navigate to the `isdn-switch` prompt for the corresponding slot for example, `isdn-switch/5` and enter:

incoming-filter <*state*>

state is on or off.

For example, to enable incoming filtering for the ISDN switch in slot 5, enter:

`isdn-switch/5#` **incoming-filter on**

show dial demand in-phone-numbers

The **show dial demand in-phone-numbers** command displays the incoming phone list numbers.

The output contains the following information:

Incoming Phone Numbers	Lists the incoming phone numbers of the primary RADIUS server.
Phone Extension	Specifies how many seconds the client should wait before retransmitting a request to the server.
Circuit Name	Specifies how many times the client should send a request to the server before considering it unreachable.

You can use the following filter flags and filter arguments with this command:

-circuit *<name>*	Displays the incoming phone list for the numbers on this circuit only.

Configuring Ethernet, FDDI, and Token Ring Services

The following sections are additions and amendments to *Configuring Ethernet, FDDI, and Token Ring Services.*

"802.1Q Parameters" lists corrected MIB Object IDs for the Enable/Disable, VLAN Name, Global VLAN Id, and Protocol Type (hex) parameters. The parameter description for Virtual Port Type is new.

"Ethernet Flow Control" on page 47 is an addition to the manual.

802.1Q Parameters

Parameter: Enable/Disable

Path: Configuration Manager > Protocols > VLAN > Interfaces
Default: Enable
Options: Enable | Disable
Function: Enables or disables the 802.1Q tagged circuit.
Instructions: Set to Disable to disable a previously configured 802.1 tagged circuit. Set to Enable to enable a disabled 802.1Q tagged circuit.
MIB Object ID: 1.3.6.1.4.1.18.3.5.1.12.6.1.1.1.2

Parameter: VLAN Name

Path: Configuration Manager > Protocols > VLAN > Interfaces
Default: None
Options: Any character string.
Function: Provides a mnemonic to associate with the VLAN. BayRS does not use this string.
Instructions: Enter a name for the VLAN.
MIB Object ID: 1.3.6.1.4.1.18.3.5.1.12.6.1.1.1.3

Parameter: Global VLAN Id

Path: Configuration Manager > Protocols > VLAN > Interfaces
Default: None
Options: Any integer value from 1 to 4095.
Function: Provides a unique identifier for the VLAN within the layer 2/layer 3 topology.
Instructions: Enter the unique VLAN numeric identifier that was assigned to the VLAN when it was initially configured on the adjacent layer 2 device. This value must match the one assigned during the initial VLAN configuration.
MIB Object ID: 1.3.6.1.4.1.18.3.5.1.12.6.1.1.1.5

Parameter: Virtual Port Type

Path: Configuration Manager > Protocols > VLAN > Interfaces
Default: Tagged
Options: Tagged
Function: Reserved for future use.
Instructions: Leave this parameter set to tagged.
MIB Object ID: 1.3.6.1.4.1.18.3.5.1.12.6.1.1.1.6

Parameter: Protocol Type (hex)

Path: Configuration Manager > Protocols > VLAN > Interfaces
Default: 33024 (8100 hexadecimal)
Options: Any integer value
Function: Specifies the contents of the TPID field in 802.1Q encapsulated frames originated by this VLAN.
Instructions: Enter (in decimal notation) the TPID value that was assigned to the VLAN when it was initially configured on the adjacent layer 2 device. This value must match the one assigned during the initial VLAN configuration.
MIB Object ID: 1.3.6.1.4.1.18.3.5.1.12.6.1.1.1.8

Ethernet Flow Control

You can now control Ethernet flow for several boards on BN platforms. This section describes how to use Site Manager and the BCC to control Ethernet flow.

Enabling Ethernet Flow Control

Flow control allows you to temporarily stop a remote station from sending packets to prevent packet loss in a congested system. Ethernet flow control is supported on BN platforms for the following boards:

- Quad 100Base-TX
- Quad 100Base-FX
- Gigabit Ethernet-SX
- Gigabit Ethernet-LX

Our implementation of flow control uses MAC control frames. These frames have a unique value of 8808H in the length/type field. They differ from typical Ethernet packets in that the data field is made up of an opcode field and a parameter field. The opcode field contains the opcode command Pause; the parameter field defines the pause time. When the receive station detects a MAC control frame with a Pause opcode, the remote transmitter pauses for a time interval equal to the pause time * 512 bit times. 512 bit times convert to 51.2 microseconds for 10 Mbps, 5.12 microseconds for 100 Mbps, and 512 nanoseconds for Gigabit.

When a transmitter receives a MAC control frame, it stops sending packets for the specified time. You can configure the sender of the MAC control frame to transmit a pause frame with a pause time of 0 when it is no longer congested, thereby causing the remote transmitter to resume sending packets. You do this by setting the Transmit Pause Zero Enable (Site Manager) parameter or the pause-zero-enable (BCC) parameter to Enable.

Using the BCC

If the interface speed is in fixed mode (that is, the speed-select parameter is not set to auto-negotiation), flow control is enabled or disabled based on the speed select value. The BCC ignores the setting for the fc-enable parameter.

For example, if speed select is 100base-x-fd, flow control is automatically disabled. Navigate to an Ethernet prompt (**box**; **ethernet 2/1**) and enter the following:

```
ethernet/2/1# auto-neg
auto-neg/2/1# speed-select 100base-x-fd
auto-neg/2/1
```

To check the state of flow control, use the **show ethernet auto-neg** command.

If the speed-select parameter is set to 100base-x-fd-cong, flow control is automatically enabled and the BCC ignores the setting for the fc-enable parameter.

For example, navigate to an Ethernet prompt (**box**; **ethernet 2/1**) and enter the following:

```
ethernet/2/1# auto-neg
auto-neg/2/1# speed-select 100base-x-fd-cong
auto-neg/2/1
```

To check the state of flow control, use the **show ethernet auto-neg** command.

If the speed-select parameter is set to auto-negotiation, use the fc-enable parameter to enable or disable flow control. The BCC ignores the pause setting for the advertised-capabilities parameter.

For example, navigate to an Ethernet prompt (**box**; **ethernet 2/1**) and enter the following:

```
ethernet/2/1# fc-enable enabled
ethernet/2/1# auto-neg
auto-neg/2/1# speed-select auto-negotiation
auto-neg/2/1
```

If you have flow control enabled, you can enter the following parameters:

fc-pause-time *<pause_time>*

pause_time is the flow control pause time. The pause time is used to calculate the total time a transmitter pauses. For example, when a transmitter receives a pause frame, it pauses for *pause_time**512 bit times. (512 bit times convert to 51.2 usec for 10 Mbps, 5.12 usec for 100 Mbps, and 512 nsec for Gigabit.) So, if the pause time is 65535 and the line speed is 100 Mbps, then the transmitter pauses for 335.54 ms (65535*5.12 usec).

pause-zero-enable *<state>*

state is enable or disable. This parameter enables or disables the ability of a congested receiver to send a pause frame with a pause time of 0 when it is no longer congested. When the remote transmitter receives a pause frame with a 0 pause time, it resumes sending packets.

For example, to specify a transmitter pause time of 65535, enter the following commands:

```
ethernet/2/1# fc-pause-time 65535
ethernet/2/1# pause-zero-enable enable
ethernet/2/1#
```

Using Site Manager

To enable flow control, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose an **XCVR** Connector.	The Edit Connector window opens.
2. Choose **Edit Line**.	The Edit 10/100MB/s Ethernet Parameters window or the Edit 1000 Mb/s Ethernet Parameters window opens, depending on the module you selected.
3. Set the following parameters: • **Flow Control Enable** • **Flow Control Pause Time** • **Transmit Pause Zero Enable** Click on **Help** or see the parameter descriptions beginning on page 55.	
4. Click on **OK**.	The Edit Connector window opens. **Note:** If the Interface Line Speed parameter is set to Auto Negotiation, the Auto Negotiation window opens. Click on **Done** to go to the Edit Connector window.
5. Click on **Done**.	The Configuration Manager window opens.

Edit Ethernet Parameter Descriptions

The Edit Ethernet Parameters windows (Figure 3, Figure 4, or Figure 5) allow you to enable BOFL, specify line speed, and enable flow control for Ethernet lines. Figure 3 is for the Quad 100Base-TX module. Figure 4 is for the Quad 100Base-FX module. Figure 5 is for the Gigabit Ethernet-SX and Gigabit Ethernet-LX modules.

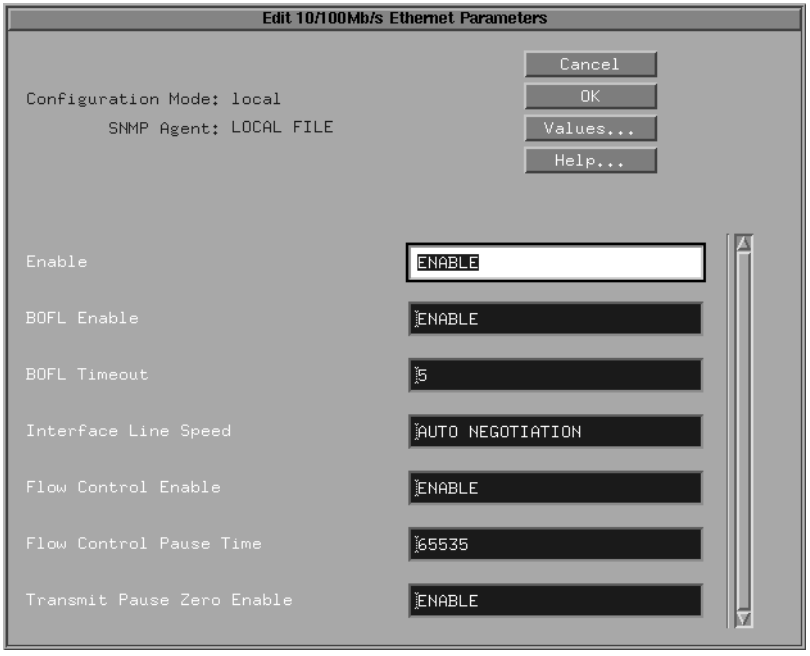


Figure 3. Edit 10/100Mb/s Ethernet Parameters Window (for 100Base-TX Module)

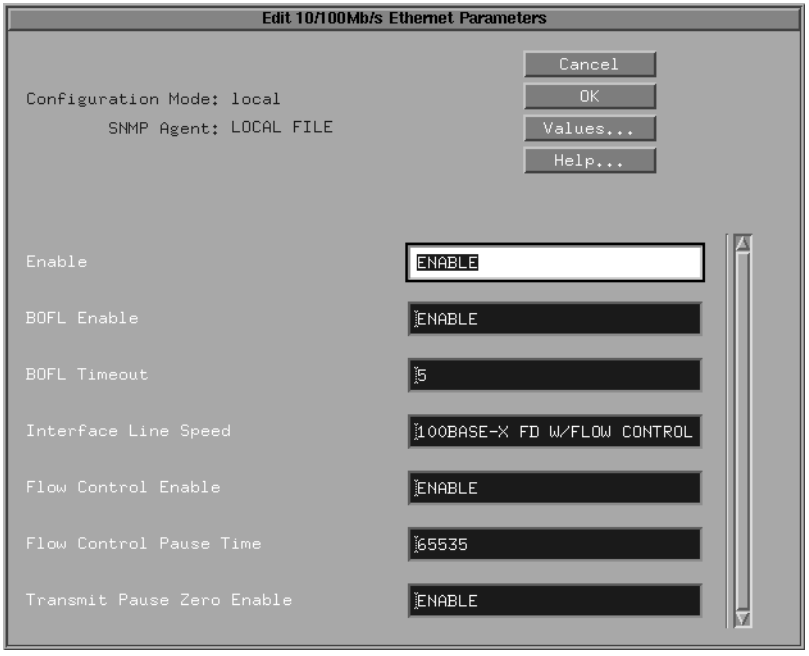


Figure 4. Edit 10/100Mb/s Ethernet Parameters Window (for 100Base-FX Module)

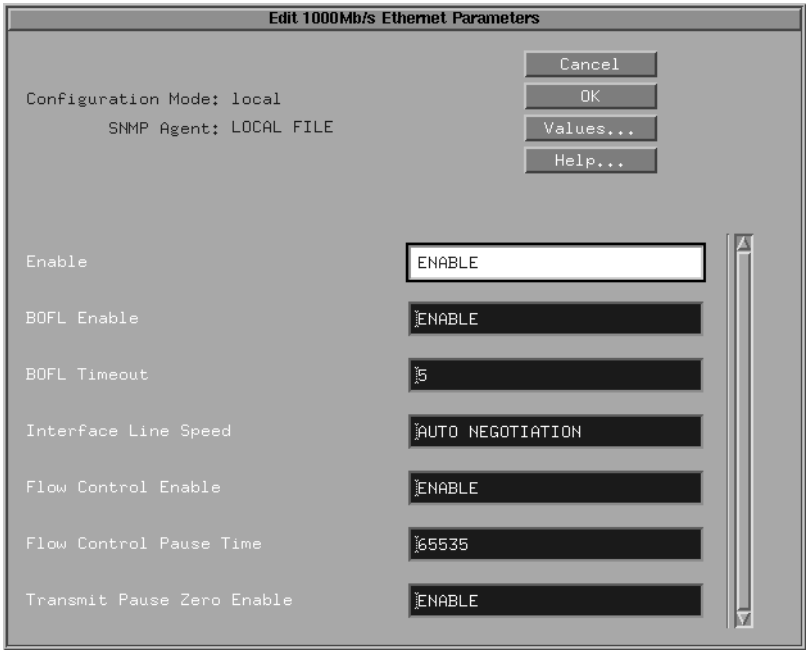


Figure 5. Edit 1000Mb/s Ethernet Parameters Window

Parameter: Enable

Path: Configuration Manager > **XCVR** Connector > **Edit Line**
Default: Enable
Options: Enable | Disable
Function: Enables or disables this Ethernet line.
Instructions: Select Enable or Disable.
MIB Object ID: 1.3.6.1.4.1.18.3.4.1.1.2

Parameter:	**BofL Enable**
Path:	Configuration Manager > **XCVR** Connector > **Edit Line**
Default:	Enable
Options:	Enable | Disable
Function:	When this parameter is set to Enable, the router sends BofL polling messages from this system to all systems on the local network.
Instructions:	Set to Enable or Disable. We recommend that you enable BofL.
MIB Object ID:	1.3.6.1.4.1.18.3.4.1.1.7

Parameter:	**BofL Timeout**
Path:	Configuration Manager > **XCVR** Connector > **Edit Line**
Default:	5 (4 if router redundancy is enabled)
Options:	1 to 60 seconds
Function:	Specifies the time between transmissions of Breath of Life messages from this Ethernet interface. Timeout will occur if five periods elapse without a successful BofL message transmission. When timeout occurs, the router disables and reenables the Ethernet interface. This parameter is valid only if you set BofL Enable to Enable.
Instructions:	Accept the default BofL timeout of 5 seconds, or specify a new value up to 60 seconds.
MIB Object ID:	1.3.6.1.4.1.18.3.4.1.1.8

Parameter: **Interface Line Speed**

Path: Configuration Manager > **XCVR** Connector (100BASE-T only) > **Edit Line** >

Default: Auto Negotiation for 100Base-TX and Gigabit Ethernet modules; 100Base-X FD w/Flow Control for 100Base-FX module

Options: For 100Base-TX, the options are Auto Negotiation | 10Base-T | 10Base-T FD (Full Duplex) | 10Base-T FD w/Flow Control | 100Base-X | 100Base-X FD (Full Duplex | 100Base-X FD w/Flow Control

For 100Base-FX, the options are 100Base-X FD (Full Duplex) | 100Base-X FD w/Flow Control

For Gigabit Ethernet, the options are Auto Negotiation | 1000Base-X FD (Full Duplex | 1000Base-X FD w/Flow control

Function: Specifies the configured line speed and duplex setting for the selected interface, or enables automatic line negotiation.

Instructions: For 100Base-TX and Gigabit Ethernet modules, choose Auto Negotiation to enable automatic line negotiation. Selecting a specific line-speed configuration disables Auto Negotiation.

For 100Base-FX modules, either accept the default, 100Base-X FD w/Flow Control, or choose 100Base-X FD (Full Duplex).

MIB Object ID: 1.3.6.1.4.1.18.3.4.16.1.1.4

Parameter: **Flow Control Enable**

Path: Configuration Manager > **XCVR** Connector > **Edit Line**

Default: Enable

Options: Enable │ Disable

Function: Enables or disables flow control.

Instructions: Accept the default, Enable, or select Disable.

MIB Object ID: 1.3.6.1.4.1.18.3.4.1.1.66

Parameter: **Flow Control Pause Time**

Path: Configuration Manager > **XCVR** Connector > **Edit Line**

Default: 65535

Options: 32 to 65535 (pause times)

Function: Specifies the flow control pause time. The pause time is used to calculate the total time a transmitter pauses. For example, when a transmitter receives a pause frame, it pauses for *pause_time**512 bit times. (512 bit times convert to 51.2 usec for 10 Mbps, 5.12 usec for 100 Mbps, and 512 nanoseconds for Gigabit.) So, if the pause time is 65535 and the line speed is 100 Mbps, then the transmitter pauses for 335.54 ms (65535*5.12 usec).

Instructions: Accept the default, 65535, or specify a value from 32 to 65535.

MIB Object ID: 1.3.6.1.4.1.18.3.4.1.1.67

Parameter: **Transmit Pause Zero Enable**

Path: Configuration Manager > **XCVR** Connector > **Edit Line**

Default: Enable

Options: Enable | Disable

Function: Enables or disables the ability of a congested receiver to send a pause frame with a pause time of 0 when it is no longer congested. When the remote transmitter receives a pause frame with a 0 pause time, it resumes sending packets.

Instructions: Accept the default, Enable, if you want a congested receiver to send a pause frame with a pause time of 0 when it is no longer congested. Choose Disable if you do not want a congested receiver to send a pause frame with a 0 pause time.

MIB Object ID: 1.3.6.1.4.1.18.3.4.1.1.68

show ethernet flow-control

The **show ethernet flow-control** command shows the status of the slots on which flow control is enabled.

This command allows for the following command filters (flags) and filter arguments:

-circuit *<circuit_name>*	Displays information about the specified circuit only.
-slot *<slot_number>*	Displays information about the specified slot only.
<circuit_name>	Displays information about the specified circuit only.

The output includes the following information:

Slot/Conn	Slot and connector number.
Circuit	Circuit number.
Flow Ctrl Enable	Whether flow control is enabled on the slot.
Pause Zero Enable	Whether transmit pause 0 is enabled on the slot.
Pause Time	Pause time specified for the transmitter.
Received FlowCtrl Frames	Number of flow control frames received by the interface.
Transmit FlowCtrl Frames	Number of flow control frames sent by the interface.
Received Unsupported Opcodes	Number of frames received by the interface that do not have a Pause opcode.

Configuring Interface and Router Redundancy

The following information replaces step 8 on page 5-19 of *Configuring Interface and Router Redundancy.*

When naming configuration files, use a filename that complies with the DOS naming standards -- eight characters followed by a dot followed by three characters. For example, save the configuration file as *Routerx.cfg*.

Do not use the filename *Router1.config* recommended in step 8 on page 5-19 of *Configuring Interface and Router Redundancy.* If you use this filename, you will see the following error message:

"Config file name must follow DOS naming conventions."

Configuring IP Utilities

The following information is an addition to *Configuring IP Utilities*.

You can now create global IP access policies that permit or deny access to the HTTP Server.

To specify that the global IP access policy should control the HTTP Server, navigate to the policy-specific prompt and enter:

service http

Configuring L2TP Services

The following sections are additions and amendments to *Configuring L2TP Services*.

"Maximum Number of L2TP Sessions" lists a revised description for the Max L2TP Session parameter.

"Name Server Addresses" on page 59," "Support for AN and ARN" on page 72," and "Support for Framed Routes" on page 72" are additions to the existing document.

Maximum Number of L2TP Sessions

It is possible to have up to 150 L2TP sessions running concurrently on any router interface.

You use the Max L2TP Session parameter to specify the maximum number of L2TP sessions that the LNS (L2TP Network Server) allows. We have increased the maximum value you can enter for the Max L2TP Session parameter from 100 to 150. The default value remains at 100.

Note: For the AN router, the maximum number of L2TP sessions is 75. The default for the AN is 50.

A complete description of the Max L2TP parameter follows:

Parameter:	**Max L2TP Sessions**
Path:	Configuration Manager > Protocols > IP > L2TP > L2TP Configuration
Default:	100 (50 for AN)
Options:	1 to 150 sessions (1 to 75 sessions for AN)
Function:	Specifies the maximum number of L2TP sessions that the LNS allows.
Instructions:	Enter the maximum number of L2TP sessions that you want the LNS to support.
MIB Object ID:	1.3.6.1.4.1.18.3.5.23.2.1.16

Name Server Addresses

You can now specify Name Server Addresses (see RFC 1877, “IP Control Protocol (IPCP) Name Server Addresses,”) for Layer 2 Tunneling Protocol (L2TP) connections.

Overview of the Name Server Addresses Feature

This name server address (NSA) feature enables a remote host dialing in to a Bay Networks router acting as an L2TP network server (LNS) to obtain NSAs from either the LNS or a RADIUS server.

To use the NSA feature, users at remote sites configuring their dial-up connections in Windows® 95, Windows 98, or Windows NT® must specify that their connections will use server-assigned name server addresses, indicating that a remote server provides NSAs. Users specify this in the Dial-Up Networking TCP/IP Settings window for the connection (Figure 6).

If a user does not select the server-assigned name server addresses setting, the connection uses the NSAs that the user enters in the TCP/IP Settings window, and the connection does not use the NSA feature.

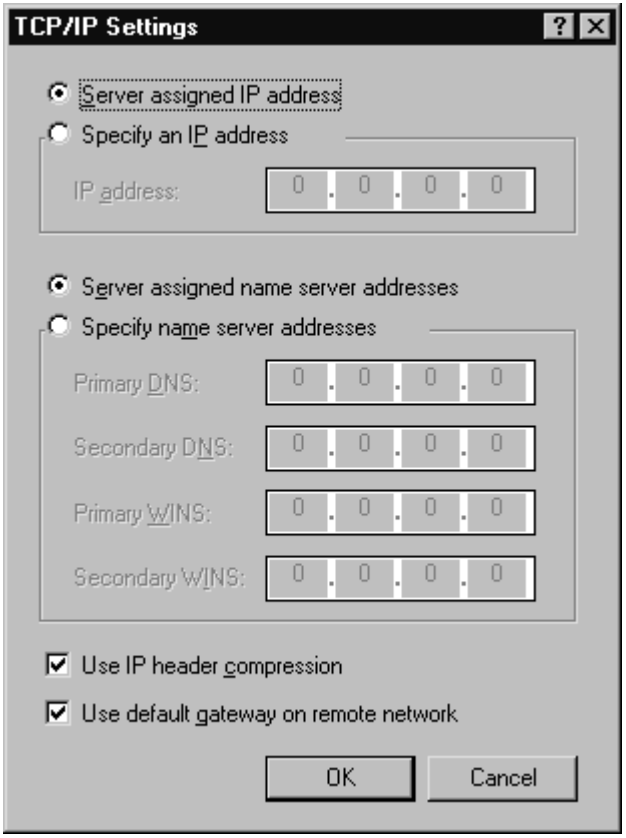


Figure 6. Specifying Server-Assigned NSAs in the Dial-Up Networking TCP/IP Settings Window

When users specify that they want to use server-assigned NSAs, they should not enter primary and secondary domain name server (DNS) and WINS name server addresses (also called *NetBIOS name server addresses* or *NBNS addresses*).

Instead, when a user dials in, the LNS or RADIUS server automatically assigns name server addresses for the connection. If a name server address changes, the network administrator can make a single modification at the LNS or RADIUS server site; every remote user is not required to go back into the TCP/IP Settings window and enter a new address.

Specifying the Origin of the Name Server Address

When you configure the NSA feature on the router, you must use Site Manager to set the Name Server Address Origin parameter to one of three values: Disable, Local, or RADIUS. The following sections describe each of these options.

Disable

If you leave the Name Server Address Origin parameter at its default of Disable, the NSA feature is disabled for the LNS configured on this router slot. When users dial in from a remote location, the connection uses DNS and NBNS (WINS) addresses that the users enter in the Dial-Up Networking TCP/IP Settings windows on their PCs.

Local

If you set the Name Server Address Origin parameter to Local, users who dial in to the LNS configured on this slot, provided that they have configured the TCP/IP settings as server-assigned name server addresses, use the DNS and NetBIOS NSAs that you set in Site Manager. You set these addresses via the Site Manager parameters Primary DNS Address, Secondary DNS Address, Primary NBNS Address, and Secondary NBNS Address.

RADIUS

If you set the Name Server Address Origin parameter to RADIUS, users who dial in to the LNS on this slot obtain NSAs from a RADIUS server, provided that they have configured their TCP/IP settings as server-assigned name server addresses.

Specifying the origin as RADIUS allows a finer distinction among users than is possible with a Local origin setting. Through the RADIUS server, you can specify that certain users use particular NSAs and other users use other NSAs, even if all users dial in through the same LNS.

To use a RADIUS server as the Name Server Address Origin, your configuration must meet the following requirements:

- You must have entered valid values for these three L2TP Site Manager parameters: RADIUS Primary Server IP Address; RADIUS Primary Server Password; and RADIUS Client IP Address.
- The RADIUS server must be operational at the location you specified.
- The RADIUS server must have entries in its database corresponding to incoming host user names.
- The RADIUS server must support vendor specific attributes (VSA) and must have the following entries in its dictionary:

```
ATTRIBUTE Annex-Primary-DNS-Server        Bay-VSA(54, ipaddr)
ATTRIBUTE Annex-Secondary-DNS-Server      Bay-VSA(55, ipaddr)
ATTRIBUTE Annex-Primary-NBNS-Server       Bay-VSA(56, ipaddr)
ATTRIBUTE Annex-Secondary-NBNS-Server     Bay-VSA(57, ipaddr)
```

Example 1: Name Server Address Origin Parameter Set to Local

Figure 7 shows a network with the following configuration:

- Users at remote hosts A, B, and C have specified “Server assigned name server addresses” in the Dial-Up Networking TCP/IP Settings window on their PCs.
- The Name Server Address Origin parameter is set to Local in Site Manager on the LNS at the corporate site.
- The other Site Manager parameters related to this NSA feature on the LNS (Primary DNS Address, Secondary DNS Address, Primary NBNS Address, and Secondary NBNS Address) are set to the addresses of name servers on the corporate network (DNS1, DNS2, NBNS1, and NBNS2).

When users at remote hosts A, B, and C make dial-up connections to the corporate network, those connections use DNS1, DNS2, NBNS1, and NBNS2 as primary and secondary name servers.

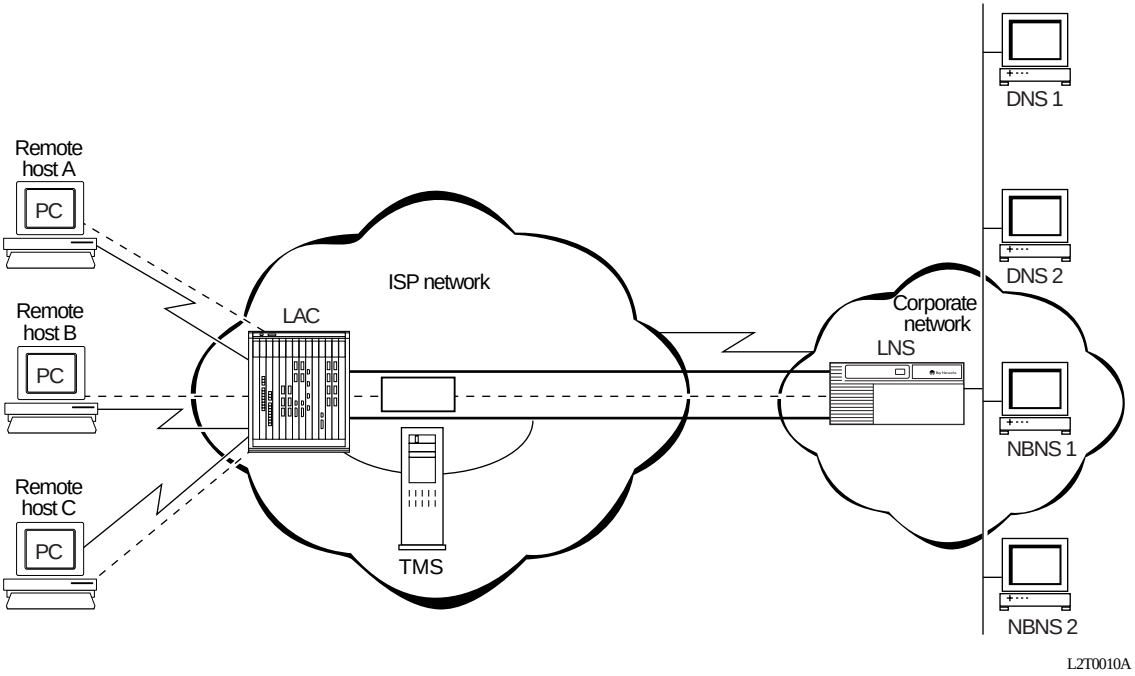


Figure 7. Network with Name Server Address Origin Parameter Set to Local

Example 2: Name Server Address Origin Parameter Set to RADIUS

Figure 8 shows a network with the following configuration:

- Users at remote hosts Eng. host A, Eng. host B, Fin. host C, and Fin. host D have specified “Server assigned name server addresses” in the Dial-Up Networking TCP/IP Settings window on their PCs.
- The Name Server Address Origin parameter is set to RADIUS in Site Manager on the LNS at the corporate site.
- The RADIUS server on the corporate network specifies that users dialing in from remote hosts in Engineering should use Eng. DNS1, Eng. DNS2, Eng. NBNS1, and Eng. NBNS2 as their primary and secondary name servers.

- The RADIUS server on the corporate network specifies that users dialing in from remote hosts in Finance should use Fin. DNS1, Fin. DNS2, Fin. NBNS1, and Fin. NBNS2 as their primary and secondary name servers.

When users at remote hosts Eng. host A and Eng. host B make dial-up connections to the corporate network, those connections use Eng. DNS1, Eng. DNS2, Eng. NBNS1, and Eng. NBNS2 as primary and secondary name servers.

When users at remote hosts Fin. host A and Fin. host B make dial-up connections to the corporate network, those connections use Fin. DNS1, Fin. DNS2, Fin. NBNS1, and Fin. NBNS2 as primary and secondary name servers.

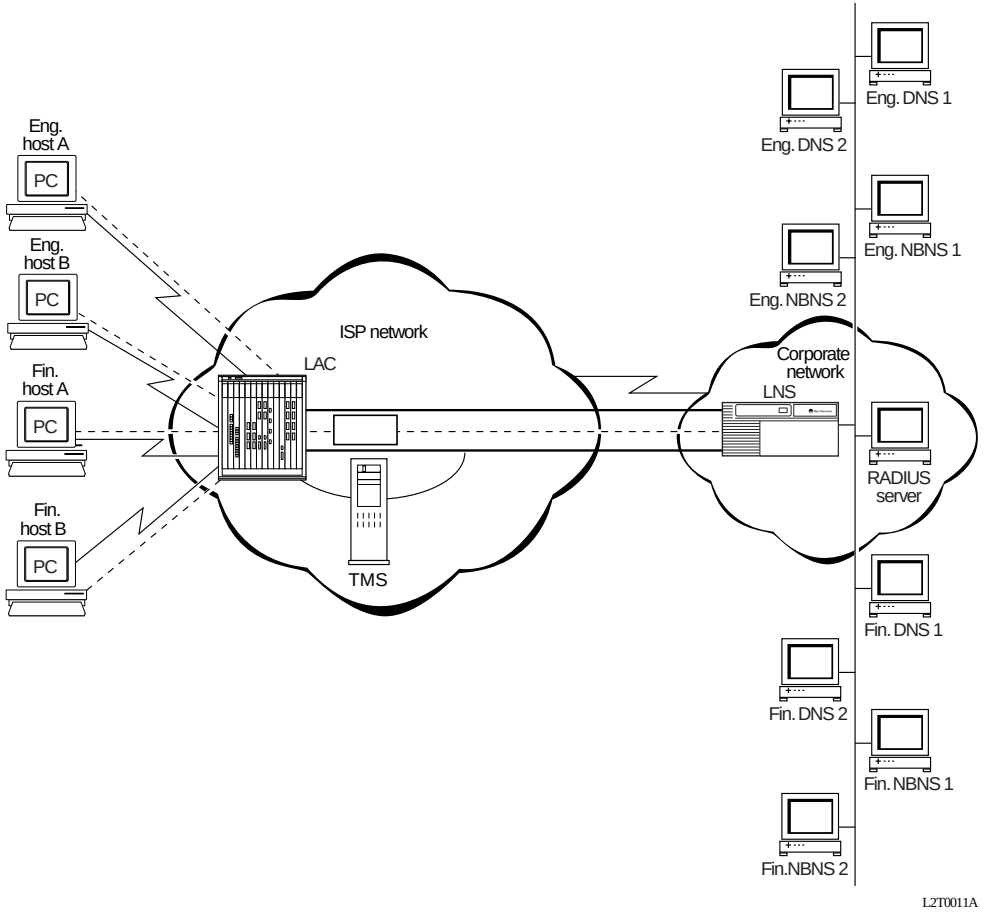


Figure 8. Network with Name Server Address Origin Parameter Set to RADIUS

Configuring the NSA Feature for L2TP

To configure the NSA feature for L2TP, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
2. Choose **IP**.	The IP menu opens.
3. Choose **L2TP**.	The L2TP menu opens.
4. Choose **L2TP Configuration**.	The L2TP Configuration List window opens.
5. Set the **Name Server Address Origin** parameter. If you set this parameter to Local, you must also set the following parameters: • **Primary DNS Address** • **Secondary DNS Address** • **Primary NBNS Address** • **Secondary NBNS Address** If you set this parameter to Radius, you must also set the following parameters: • **RADIUS Primary Server IP Address** • **RADIUS Primary Server Password** • **RADIUS Client IP Address** Click on **Help** or see the parameter descriptions beginning on page 70.	
6. Click on **Done**.	You return to the Configuration Manager window.

Checking NSA Assignments

To see which NSAs the LNS or RADIUS server assigned to a particular user, complete the following steps at the remote user's PC:

1. **Choose Start > Run.**

   The Run window opens (Figure 9).

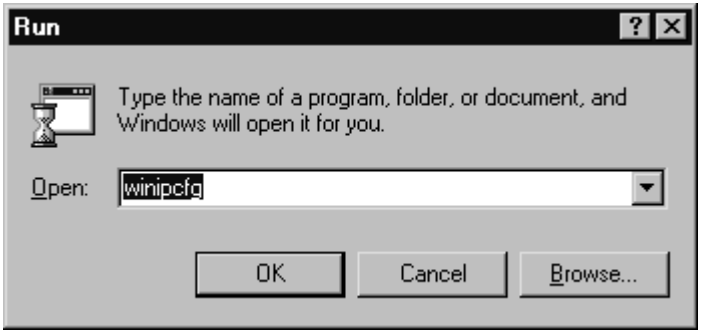


Figure 9. Run Window

2. **At the `Open:` prompt, enter:**

   winipcfg

   The IP Configuration window opens (Figure 10).

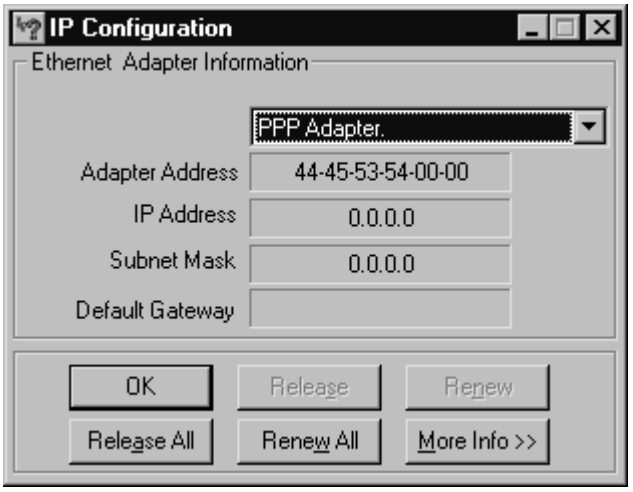


Figure 10. IP Configuration Window

3. Click on More Info.

The More Info. IP Configuration window opens (Figure 11). The DNS Servers field lists the primary and secondary DNS server addresses assigned by the server. (Click on the . . . button to see the secondary server address.) The Primary WINS Server and Secondary WINS Server fields list the primary and secondary NBNS addresses, if any.

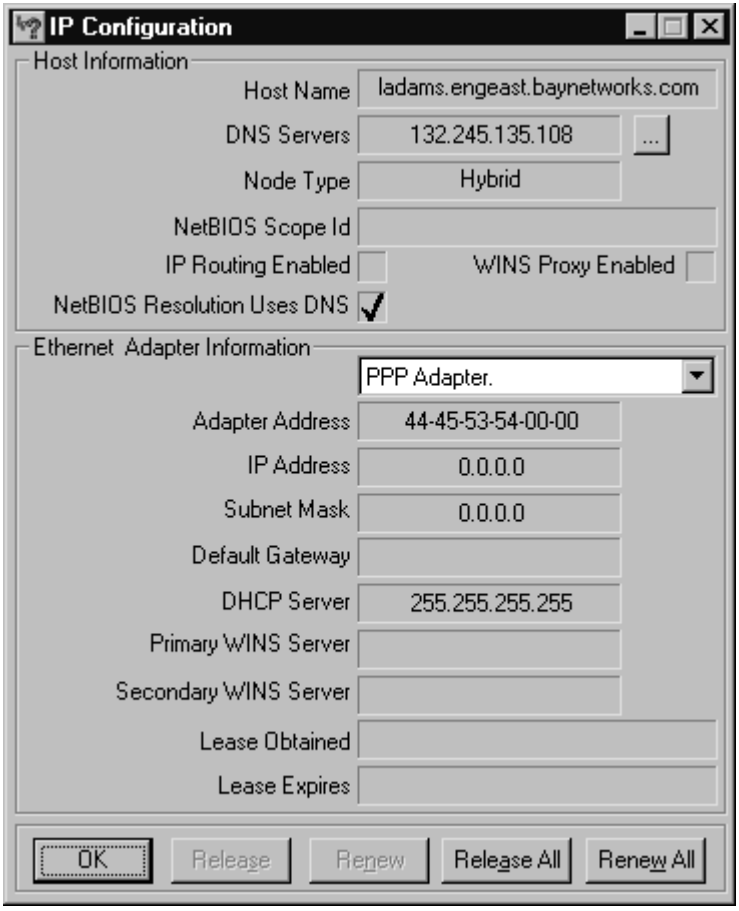


Figure 11. More Info. IP Configuration Window

Name Server Addresses Parameter Descriptions

This section includes descriptions of the Site Manager parameters related to the NSA feature. This is the same information available by clicking on the Help button.

Parameter: Name Server Address Origin

Path: Configuration Manager > Protocols > IP > L2TP > L2TP Configuration

Default: Disable

Options: Disable │ Local │ RADIUS

Function: Specifies whether or not the NSA feature is enabled and, if enabled, specifies the source of the domain name server (DNS) and NetBIOS name server (NBNS) addresses.

Instructions: Set to Disable if you do not want to use the NSA feature. If this feature is disabled, remote hosts use the DNS and NBNS addresses configured on their individual dial-up connections. Set to Local if you want all remote hosts to use the DNS and NBNS addresses that you configure in Site Manager. Set to RADIUS if you want remote hosts to obtain DNS and NBNS addresses from a RADIUS server.

MIB Object ID: 1.3.6.1.4.1.18.3.5.23.2.1.23

Parameter: Primary DNS Address

Path: Configuration Manager > Protocols > IP > L2TP > L2TP Configuration

Default: None

Options: Any valid IP address

Function: If the Name Server Address Origin parameter is set to Local, the Primary DNS Address parameter specifies the address of the primary domain name server (DNS) that every remote host should use.

Instructions: Enter the IP address of the primary DNS.

MIB Object ID: 1.3.6.1.4.1.18.3.5.23.2.1.24

Parameter: Secondary DNS Address

Path: Configuration Manager > Protocols > IP > L2TP > L2TP Configuration

Default: None

Options: Any valid IP address

Function: If the Name Server Address Origin parameter is set to Local, the Secondary DNS Address parameter specifies the address of the secondary domain name server (DNS) that every remote host should use. The system uses this secondary DNS if it cannot reach the primary DNS.

Instructions: Enter the IP address of the secondary DNS.

MIB Object ID: 1.3.6.1.4.1.18.3.5.23.2.1.25

Parameter: Primary NBNS Address

Path: Configuration Manager > Protocols > IP > L2TP > L2TP Configuration

Default: None

Options: Any valid IP address

Function: If the Name Server Address Origin parameter is set to Local, the Primary NBNS Address parameter specifies the address of the primary NetBIOS name server (NBNS) that every remote host should use.

Instructions: Enter the IP address of the primary NBNS.

MIB Object ID: 1.3.6.1.4.1.18.3.5.23.2.1.26

Parameter: Secondary NBNS Address

Path: Configuration Manager > Protocols > IP > L2TP > L2TP Configuration

Default: None

Options: Any valid IP address

Function: If the Name Server Address Origin parameter is set to Local, the Secondary NBNS Address parameter specifies the address of the secondary NetBIOS name server (NBNS) that every remote host should use. The system uses this secondary NBNS if it cannot reach the primary NBNS.

Instructions: Enter the IP address of the secondary NBNS.

MIB Object ID: 1.3.6.1.4.1.18.3.5.23.2.1.27

Support for AN and ARN

In BayRS Version 13.20, you can configure an AN or ARN router as an LNS. Prior to 13.20, only a BLN, BCN, or ASN router could be an LNS.

Support for Framed Routes

In BayRS Version 13.20, the L2TP implementation includes support for framed routes. With framed-route support, the LNS does not have to use RIP (Routing Information Protocol) to learn all routes on a remote network. Instead, when a user dials in, the RADIUS server sends the LNS a framed route, which includes all the information the LNS needs to communicate with the remote user.

For example, in Figure 12, Remote Site A has three networks, with addresses 1.1.1.0, 1.1.2.0, and 1.1.3.0. Without framed-route support, the LNS uses RIP to learn the addresses of all three networks even though all users requiring VPN services reside only on the 1.1.1.0 network. The LNS enters the addresses of all three networks into its routing table. In large network configurations, learning the addresses of all networks on a remote site can result in many unnecessary routes in the LNS's routing table.

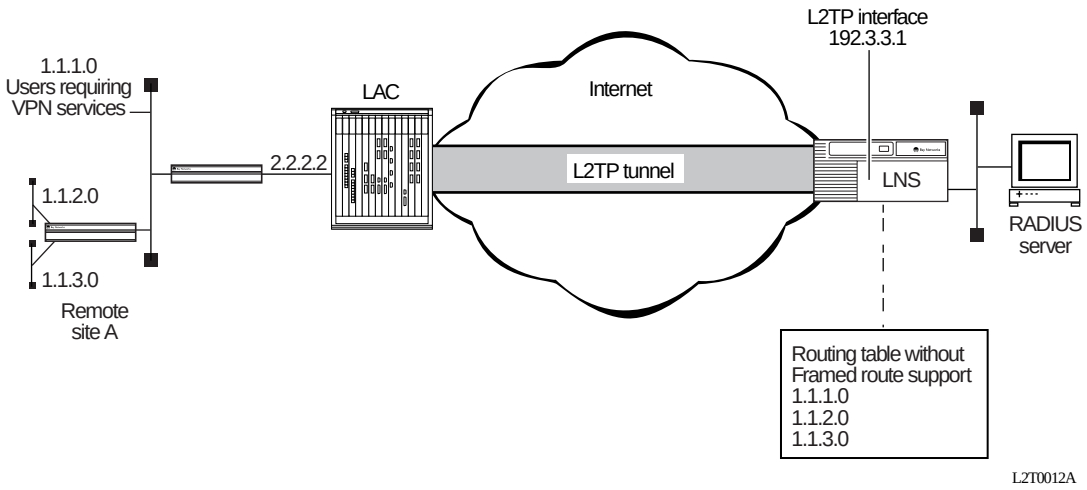


Figure 12. L2TP Network without Framed-Route Support

Figure 13 shows the same network with framed-route support on the LNS. In this configuration, Remote Site A has an associated framed route stored on the central RADIUS server. This framed route describes the routing table entries required for the LNS to communicate with users at Remote Site A.

When a user dials in from Remote Site A, as part of the session/user authentication process, the RADIUS server sends the framed route to the LNS. The LNS adds the information contained in the framed route to its routing table. When the session goes down or the user hangs up, the LNS removes the routes it learned from the RADIUS server from its routing table.

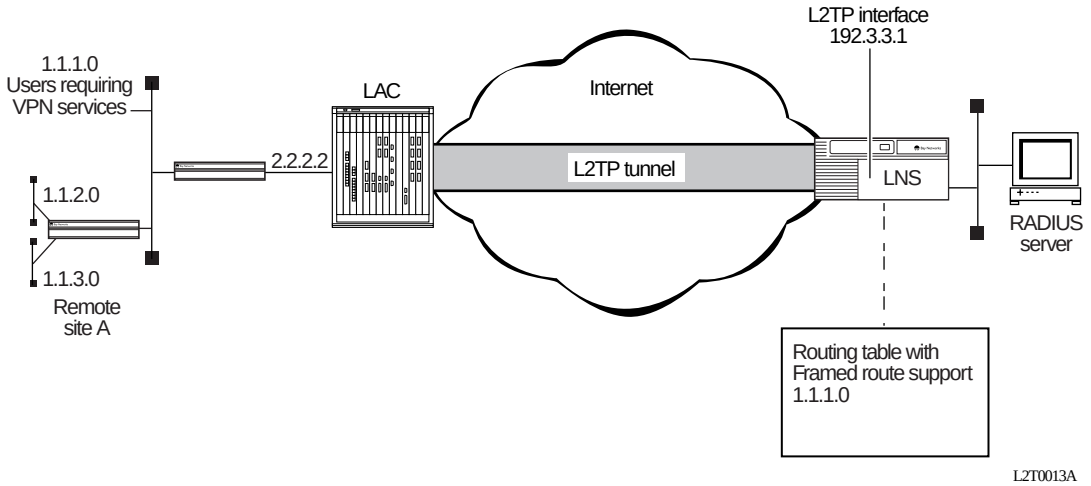


Figure 13. L2TP Network with Framed-Route Support

Using Framed Routes

The LNS can learn the routes for some remote sites using framed routes from the RADIUS server and learn routes from other remote sites the traditional way, using RIP. For remote sites where you want to use the framed-route feature, you must configure your network as follows:

- Disable RIP on the remote network for which you want to use framed routes. For example, in Figure 13, you would disable RIP on the 2.2.2.2 interface.
- On the RADIUS server, enter the framed route for the remote network. The framed route is a standard RADIUS attribute, with the following format:

<*destination_address*> [**/**<*prefix_length*>] <*gateway*> <*metric*>

destination_address is the address of the remote user's network.

prefix_length is optional. It specifies the length of the network mask for the remote user's network:**8** for Class A addresses; **16** for Class B addresses; **24** for Class C addresses.

gateway is the address of the interface through which the LNS connects to the remote user's network. If you specifiy **0.0.0.0** for gateway, the system automatically sets the gateway to the address of the L2TP interface.

metric is the number of hops from the gateway to the destination network.

For example, you would enter the following framed route on the RADIUS server in Figure 13:

1.1.1.0/24 192.3.3.1 1

When the RADIUS server passes this framed route to the LNS, the LNS has the information it needs to communicate with users on the 1.1.1.0 network:

Configuring PPP Services

The following sections are amendments to *Configuring PPP Services.*

Replace the existing sections "Setting the Maximum Receive Unit (MRU)" and "Enabling RFC 1661 Compliance for Dial Circuits" with the sections that follow. Note that all the upgrade options listed in "Setting the Maximum Receive Unit (MRU)" are no longer valid.

Setting the Maximum Receive Unit (MRU)

The Maximum Receive Unit (MRU) Size parameter specifies the maximum receive unit size, in bytes, for the line. The default MRU size for leased lines is 1590 bytes. The default MRU size for dial lines is 1500 bytes.

For leased lines, the router negotiates the MRU size automatically, so you do not have to configure a value manually. However, to ensure that the router can negotiate the MRU size successfully, you must disable the RFC1661 Compliance parameter. This parameter is enabled by default to ensure the correct MRU size for dial lines.

For instructions on disabling RFC 1661 compliance, see “Disabling RFC 1661 Compliance.”

Using the BCC

The MRU size and RFC 1661 compliance are included in the **dial** object for PPP dial interfaces. For instructions on setting the **mru** parameter and **mru-compliance** parameter, see *Configuring Dial Services*.

Using Site Manager

For leased lines, MRU is negotiated automatically, so there is no need to manually set this parameter. To set the MRU for dial lines, complete the following tasks:

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols**.	The Protocols menu opens.
1. Choose **PPP**.	The PPP menu opens.
2. Choose **Interfaces.**	The PPP Interface List window opens.
3. Click on **Lines**.	The PPP Line List window opens.
4. Set the **MRU Size (bytes**) parameter. Click on **Help** or see the parameter descriptions beginning on page 77.	
5. Click on **Done**.	You return to the PPP Interface List window.
6. Click on **Done**.	You return to the Configuration Manager window.

Disabling RFC 1661 Compliance

RFC 1661 compliance is enabled by default for dial lines. For leased lines, you must disable compliance so that the MRU size can be negotiated correctly.

To disable RFC 1661 compliance, complete the following tasks:

Site Manager Path	
You do this	**System responds**
1. In the Configuration Manager window, choose **Protocols.**	The Protocols menu opens.
2. Choose **PPP.**	The PPP menu opens.
3. Choose **Interfaces**.	The PPP Interface List window opens.
4. Click on **Lines**.	The PPP Line List window opens.
5. Set the **RFC1661 Compliance** parameter. Click on **Help** or see the parameter descriptions beginning on page 77.	
6. Click on **Done**.	You return to the PPP Interface List window.
7. Click on **Done**.	You return to the Configuration Manager window.

PPP Line Parameters

Replace the existing descriptions for MRU Size and RFC1661 Compliance with the parameter descriptions that follow.

Parameter:	MRU Size (bytes)
Path:	Protocols > PPP > Interfaces > **Lines**
Default:	1590 (leased lines) | 1500 (dial lines)
Options:	1 to 4600
Function:	Sets the maximum receive unit (MRU) size, in bytes, for the line.
Instructions:	The router determines the MRU size based on the value of the RFC1661 Compliance parameter and whether the connection is a leased line or a dial line. For leased lines, set the RFC1661 Compliance parameter to Disable. The router will then negotiate the MRU size automatically; there is no need to manually configure the MRU size. For dial lines, accept the default value for the RFC1661 Compliance parameter (Enable). With RFC1661 Compliance enabled, you can manually configure the MRU size. In most cases, you should accept the default value, 1500 bytes. However, if you configure an MRU size other than the default, be aware that the router can negotiate only for an MRU value that is larger than its configured value. The range that it can negotiate is between the configured MTU size and the router driver MTU value, minus the PPP header and CRC size. For example, if the configured MTU is 1500 and the driver MTU is 1600, the negotiation range is 1500 to 1590 (1600 - 8 - 2 = 1590). We recommend that the peer be configured for an MRU value of at least 1500 bytes. Note also that the router and its peer do not have to use the same MRU value to communicate with one another.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.2.1.1.48

Parameter:	RFC1661 Compliance
Path:	Protocols > PPP > Interfaces > **Lines**
Default:	Enable
Options:	Enable | Disable
Function:	Enables RFC 1661 compliance for a PPP dial circuit. RFC 1661 defines the standards for PPP operation.
Instructions:	Accept the default, Enable, to make the PPP dial circuit RFC 1661-compliant. For PPP leased lines, select Disable.
MIB Object ID:	1.3.6.1.4.1.18.3.5.9.2.1.1.49

Configuring RMON and RMON2

The following sections are additions to *Configuring RMON and RMON2*.

Configuring Mini-RMON on BN Routers

On the BN router, Bay Networks provides a condensed version of the RMON MIB standard, called *mini-RMON*. Mini-RMON supports the statistics RMON MIB group.

Note: Mini-RMON is available on BN platforms with FRE-4-PPC processor modules *only.*

After you configure the BN router to collect RMON statistics, you can view these statistics using the RMON tools in Optivity Analysis™ for UNIX or Optivity Analysis for Windows NT®. For information about using these RMON tools, see the documentation for Optivity Analysis for UNIX or Optivity Analysis for Windows NT.

Configuration Considerations

Mini-RMON is started as a single process serving all slots on the BN. If you remove or reset the FRE-4-PPC processor card installed in the slot from which you started min-RMON, you must restart mini-RMON.

Starting Mini-RMON

You can enable the BN to collect RMON statistics using the Bay Command Console (BCC) or by running the *install.bat* script. For instructions, see *Quick-Starting Routers*.

Disabling Mini-RMON Data Collection

To stop collecting mini-RMON statistics on the Ethernet, you use the BCC to delete the RMON Stats base module on the BN router.

To delete the RMON Stats base module on the BN router:

1. **Navigate to the native-rmon prompt (for example, box; native-rmon) and enter:**

   delete

2. **Navigate to the RMON prompt (for example, box; rmon) and enter:**

   delete

Configuring SNMP, BootP, DHCP, and RARP Services

The following sections are additions to *Configuring SNMP, BootP, DHCP, and RARP Services*.

SNMP View-Based Access Control

Beginning with Version 13.20, BayRS includes the new feature SNMP View-Based Access Control. To understand how this feature works and its benefits, you must be familiar with SNMP and the relationship between agents, managers, and communities. For an explanation, refer to *Configuring SNMP, BootP, DHCP and RARP Services*.

SNMP View-Based Access Control allows you to modify what can or cannot be seen of a router's MIB tree. It lets you include or exclude from a view any MIB object, attribute, or instance in the router's MIB. You can also include or exclude access to a MIB subtree for traps, and for the SNMP operations **get**, **get-next**, and **set**. When you configure a view, you specify view subtrees; that is, instructions for what MIB information the agent will allow to be seen and not seen within the community.

An agent view is associated with a community. In fact, a view is enabled only when you associate it with a community. A community can have only one agent view associated with it; however, the view itself may contain many different MIB subtree inclusions and exclusions.

How is SNMP View-based Access Control Useful?

SNMP View-based Access Control provides an access control solution that allows you to filter the information from an SNMP agent, thereby letting you control the view of the network. For instance, a service provider can allow two different customers to view their statistics on the router discretely. The service provider can create a view for two different customers, so that each customer sees only the statistics and configuration information that the service provider wants each to see.

This feature also lets you manage overlapping private address spaces. For example, if two routers use the same IP address, you can create a view that excludes the MIB of one address. Then, when the management station queries for information, it receives information only from the router whose view you did not exclude.

You can configure this SNMP View-based Access Control using either the Technician Interface or the Bay Command Console (BCC™). Use the commands described next to configure this feature.

Configuring, Listing and Deleting Views

You use the **snmpserver view** command with various arguments to configure views, or to list or delete views, and their contents. You can enter this command at either the Technician Interface or the BCC prompt.

Configuring Views

To configure a view, enter the following command:

snmpserver view {*<view_name>*} {*<oid_tree>*} {**included** | **excluded**}

<view_name> is the name that you assign to this particular view.

<oid_tree> specifies the portions of the MIB that you want to include or exclude.

included specifies that *<oid_tree>* is to be included in this view.

excluded specifies that <*oid_tree*> is to be excluded from this view.

Using Wild Cards

When you include the *<oid_tree>* argument with the **snmpserver view** command**,** you can use wild cards. You can use one wild card with any portion of the *<oid_tree>*, and a second wild card at the end of the *<oid_tree>*. The first wild card affects the attribute portion of the subtree, and the second wild card affects the instance portion of the subtree. A match on an incoming SNMP OID is made on the longest matching MIB subtree. Refer to the following examples.

Entering for the <oid_tree>:	Includes or Excludes in the View:
wfIpIntfCfgEntry.*.192.32.140.1.1	All attributes of wfIpIntfCfgEntry
wfIpIntfCfgEntry.* or **wfIpIntfCfgEntry**	All instances of wfIpIntfCfgEntry
wfIpIntfCfgEntry.1.*	All instances of wfIpIntfCfgEntry with an attribute ID of 1
wfIpIntfCfgEntry.1.192.32.*	All of the instances of wfIpIntfCfgEntry with an attribute of 1 that have an instance ID that begins with 192.32
wfIpIntfCfgEntry.*.192.32.*	All attributes of wfIpIntfCfgEntry that have an instance ID that begins with 192.32.

Note: You can only use wild cards with an object that is represented in dotted-decimal notation.

Listing Views or View Contents

To list all previously configured views or the MIB subtrees belonging to a particular view, enter:

snmpserver view [*<view_name>*] **list**

<view_name> is the name of the view for which you want to display MIB subtrees.

list displays all MIB subtrees that belong to *<view_name>.* Or, if you do not use the argument *<view_name>*, the command displays the names of all previously configured views.

Deleting Views or View Contents

To delete a view or the MIB subtrees belonging to a particular view, enter:

snmpserver view {*<view_name>*} [*<oid_tree>*] **delete**

<view_name> is the name of the view that you either want to delete or from which you want to delete MIB subtrees.

<oid_tree> specifies the MIB subtree you want to delete from *<view_name>*.

delete deletes an entire view if you do not specify *<oid_tree>*. If you do specify *<oid_tree>*, then the command deletes *<oid_tree>* from the specified view.

Examples

When you configure a view, you create a new MIB subtree. The following command creates a view named “block,” which will not show any attributes of wfIpIntfCfgEntry, that belongs to 192.32.140.1.1:

snmpserver view block wfIpIntfCfgEntry.*.192.32.140.1.1 excluded

To see all of the subtrees that belong to the view block, enter:

snmpserver view block list

The command displays the following:

```
View Subtree                       View Type     Subtree Index
wfIpIntfCfgEntry.*.192.32.140.1.1 Excluded      1.1
```

To see all of the previously configured views by name, enter:

snmpserver view list

The command displays the following:

```
View Index                      View Name
1                               block
```

You can delete an *<oid_tree>* from a view. When you do, you also delete the associated subtree and its include or exclude action. For example, to delete the *<oid_tree>* and its associated include or exclude action from the view named "block," enter:

snmpserver view block wflpIntfCfgEntry.*.192.32.140.1.1 delete

To delete the entire view named "block" and all of its subtrees, enter the following:

snmpserver view block delete

Associating, Listing, and Deleting Communities

You use the **snmpserver community** command with various arguments to configure communities, associate views with communities, or to list or delete communities and their contents. You can enter this command at either the Technician Interface or the BCC prompt.

Configuring Communities

To configure a community, enter the following command:

snmpserver community {*<community_name>*} {**RO** | **RW**}

<community_name> is the name that you give to this community.

RO specifies read-only access to the viewable MIBs for this community.

RW specifies read-write access to the viewable MIBs for this community.

Associating a View with a Community

To associate a view with a community, enter the following command:

snmpserver community {*<community_name>*} {*<view_name>*}

<community_name> is the name of the community to which you want to associate the view.

<view_name> is the name of the view you are associating with the community.

Listing Communities or Community Contents

To list all previously configured views or the MIB subtrees belonging to a particular view, enter:

snmpserver view [*<community_name>*] **list**

<community_name> is the name of the community for which you want to display this information: community name, community index, access rights of the community, and the view associated with the community.

list displays the community name, community index, access rights of the community, and the view associated with *<community_name>,* if you use the *<community_name>* argument. Or, if you do not use the *<community_name>* argument, the command displays the names of all configured communities.

Deleting Communities or Community Contents

To delete a community or its contents, enter:

snmpserver view {*<community_name>*} [*<view _name>*] **delete**

<community_name> is the name of the community from which you want to delete a view.

<view_name> is the name of the view that you to delete from *<community_name>*.

delete deletes a view from a community if you specify *<view _name>*. If you do not specify *<view _name>*, then the command deletes the specified community entirely.

Examples

To create a community named “pubnet” that is configured to allow read-write access, enter:

snmpserver community pubnet RW

To associate the view named “block” with the community name “pubnet,” enter:

snmpserver community pubnet view block RW

To see the community name, access rights of the community, view name associated with the community, and the community index, enter:

snmpserver community pubnet list

The command displays the following:

```
Community       Community      Associated
Index           Name           View             Access

2               pubnet         block            read-write
```

To see a complete list of all configured communities, enter the following command. Note that a community named public is always configured by default.

snmpserver community list

The command displays the following

```
Community       Community
Index           Name           Associated View   Access

1               public         none              read-write

2               pubnet         block             read-write
```

You can disassociate a view from a community. For example, to delete the view named “block” from the community “pubnet,” enter:

snmpserver community pubnet view block delete

You can also delete an entire community record. All views will be disassociated from the record. For example, to delete the community named “pubnet,” enter the following:

snmpserver community pubnet delete

Configuring Syslog Services

This information is an addition to the BayRS documentation set. It does not supplement or replace information in any existing document.

Configuring and Monitoring Syslog Using the BCC

This section provides information about:

- Syslog services on a Bay Networks router
- Syslog daemon (*syslogd*) services on a UNIX workstation
- How to configure *syslogd* on a UNIX workstation
- Procedures for configuring and managing Syslog services on a router
- BCC **show** commands for monitoring Syslog statistics and runtime information
- Syslog configuration parameters

Overview of the Syslog Service

You can use the BayRS Syslog messaging service to capture and process router event messages on any UNIX-based network management platform. The Syslog component of the router software supports this messaging function by communicating with a UNIX daemon named *syslogd* on your management workstation. The *syslogd* daemon receives and locally logs, displays, prints, and forwards messages that originate from local and external sources.

Figure 14 illustrates Syslog and *syslogd* functions.

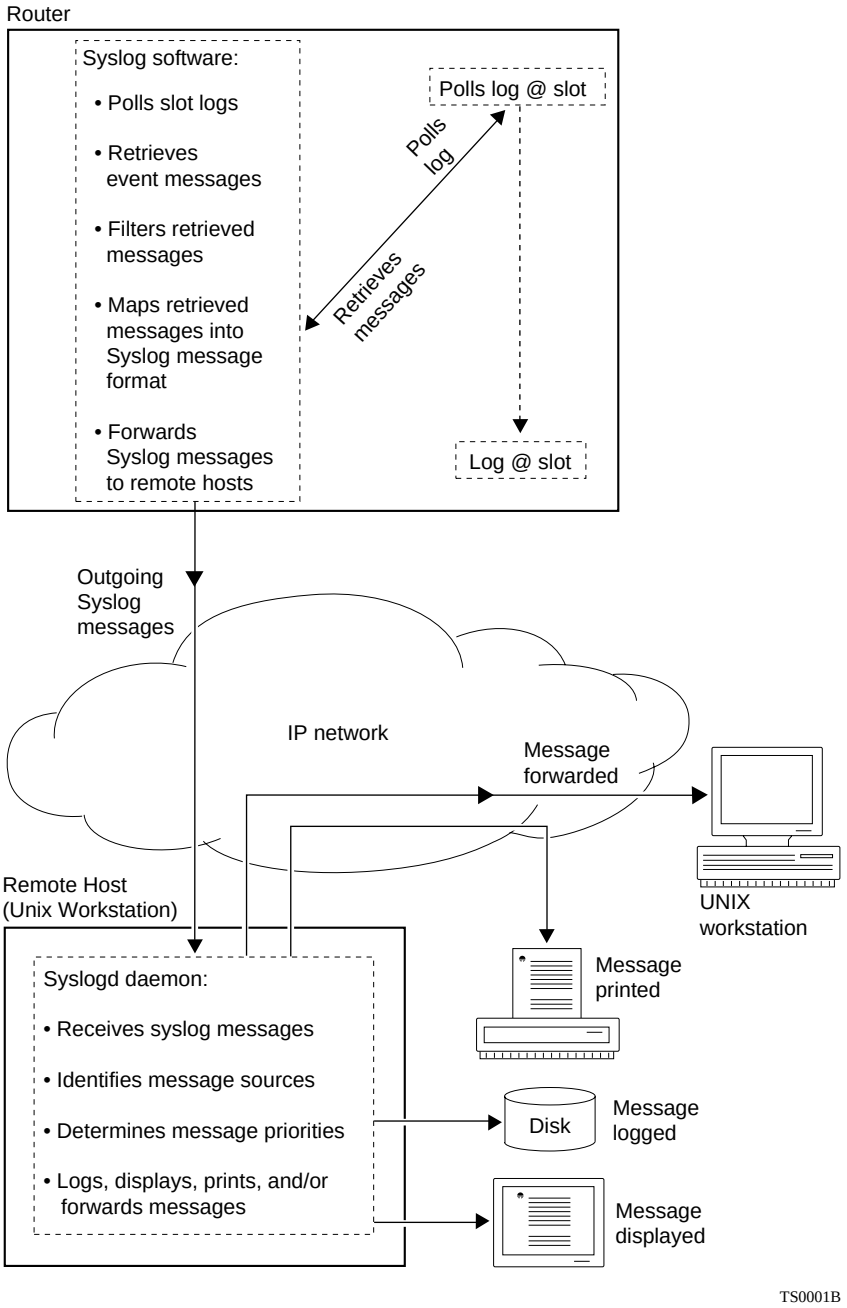


Figure 14. Syslog and *syslogd* Operations

On each slot, Syslog performs the following functions:

- Polls the local events log buffer to retrieve new event messages
- Selects event messages that meet the requirements of entity filters that you configure on the router
- Maps the messages it retrieves into Syslog message format
- Inserts a priority code into each reformatted message
- Orders messages chronologically, if you first enabled the message sequencing feature
- Forwards messages to IP on the router, which in turn forwards messages to remote hosts identified in the Syslog host table

At a remote UNIX management workstation, *syslogd*:

- Receives Syslog messages from Bay Networks routers
- Examines the priority code in each message
- Determines the system handling for each message
- Dispatches each message to any or all of the following destinations:
  - -- Workstation display
  - -- Local log file
  - -- Designated printer
  - -- One or more remote hosts

Entity Filters

Each protocol and system service in the router software has a unique entity name, which is contained in each event message originated by that entity. For a complete list of BayRS entity names and their corresponding internal entity numbers, refer to the BayRS documentation CD or access the event message database at:

http://support.baynetworks.com/library/tpubs/events

You configure *entity filters* on each router to capture only the messages that you specify.

You can filter event messages by:

- Entity name
- Event number
- Event severity level
- Device slot number

Figure 15 illustrates how an entity filter limits the number of event messages that Syslog forwards from a router to a specific remote host.

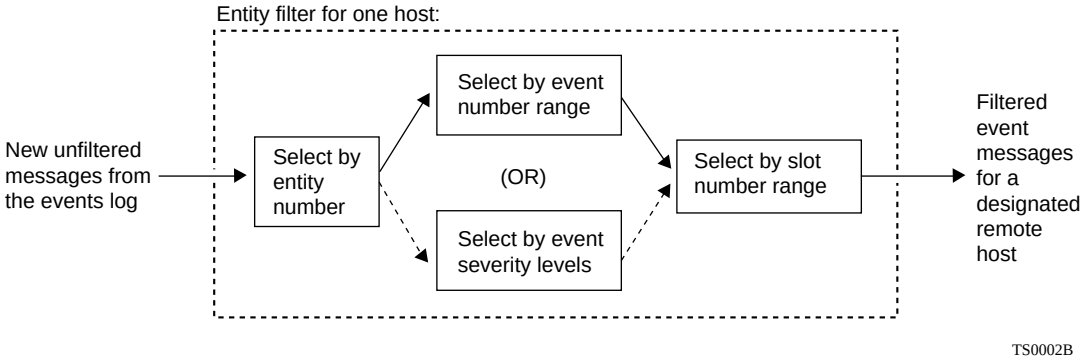

Entity filter for one host:
New unfiltered messages from the events log
Select by entity number
Select by event number range
(OR)
Select by event severity levels
Select by slot number range
Filtered event messages for a designated remote host
TS0002B

Figure 15. Router Event Message Filtering for One Host

You can configure an entity filter to do one of the following:

- Capture from one entity all messages that fall within a numbered range of events.
- Capture from all entities messages logged with specific severity levels.

Syslog forwards all captured events to the hosts identified in the BCC Syslog configuration.

Syslog Message Format

Syslog running on each slot maps filtered event messages into Syslog message format. For example, the following system log message

```
#1: 02/07/95 16:03:18.679 INFO SLOT2  FTP  Code:5
FTP is initializing.
```

looks as follows in Syslog format:

```
<AE>FTP: SLOT:2 SEVERITY:Info ENTITY_CODE/EVENT_CODE:88/5
FTP is initializing.
```

Figure 16 shows how Syslog encapsulates a message into a UDP packet.

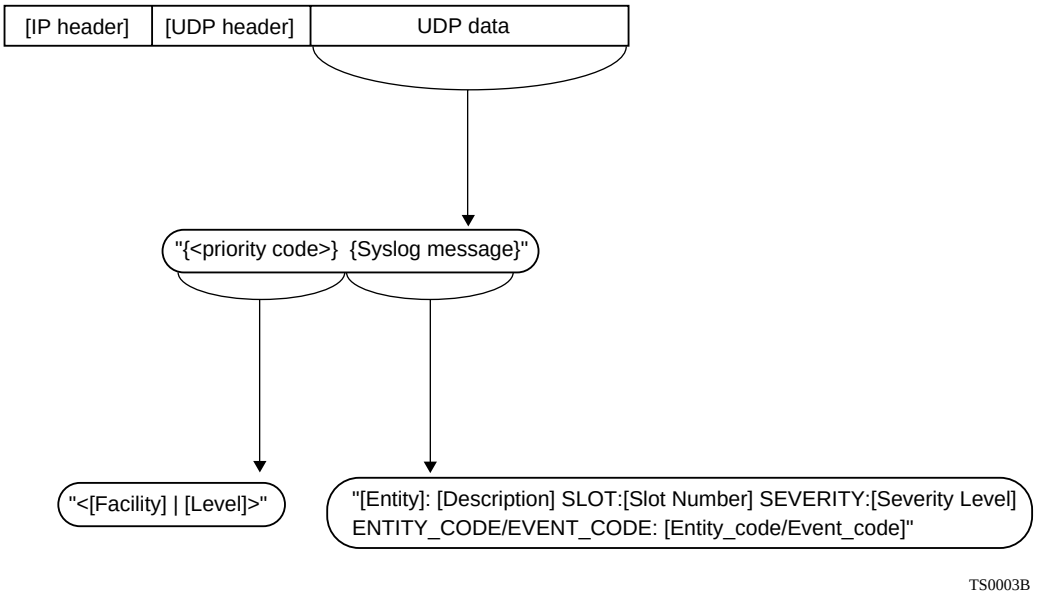


Figure 16. Syslog Message Encapsulation

The following paragraphs describe the fields in a Syslog packet shown in Figure 17 (for an event message that matches all filtering criteria).

IP Header -- Syslog adds the destination IP address for a specific remote host.

UDP Header -- Syslog adds the destination UDP port number on the remote host identified in the IP header.

UDP Data -- The UDP data field in the Syslog packet contains a reformatted router event message plus a priority code required by the remote host. The remote host uses this information to decide how to handle messages received from a router.

Priority Code -- A priority code and its text consist of a facility code plus an error-level code in the form *facility.error* (Figure 17).

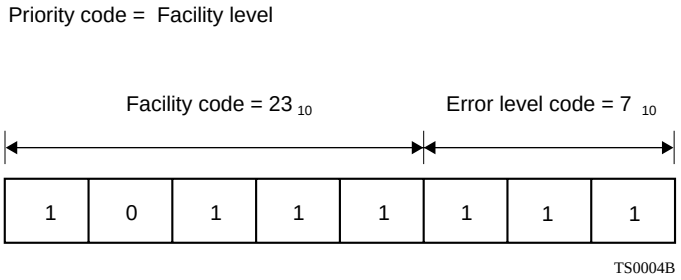


Figure 17. Syslog Message Composition

Facility Codes

The facility code identifies a standard UNIX system facility that receives a message from an internal or external software entity. The “Local <0-7>” UNIX system facilities receive event messages (in Syslog format) from routers in the network. The following table relates UNIX system facility names to their respective facility codes on a workstation.

UNIX System Facility Name	Facility Code (equivalent decimal value)
Local 0	1
Local 1	2
Local 2	3
Local 3	4
Local 4	5
Local 5	6
Local 6	7
Local 7	8

Severity Levels

The error-level code identifies the level of urgency of a received message for UNIX system-handling decisions. The following table shows one way to map UNIX system error codes and error levels to the severity levels of event messages from a Bay Networks router.

UNIX System Error Codes	UNIX System Error Levels	Bay Networks Router Event Message Severity Levels
1	LOG_EMERG	Fault
2	LOG_ALERT	Warning
3	LOG_CRIT	Warning
4	LOG_ERR	Warning
5	LOG_WARNING	Warning
6	LOG_NOTICE	Info
7	LOG_INFO	Info
8	LOG_DEBUG	Debug, Trace

You determine how the severity levels of Bay Networks router event messages map to error levels on your UNIX workstation based on the requirements of the network management application you use.

For instructions on how to map router event messages to UNIX system error level codes, see “Mapping Router Message Severity Levels to UNIX System Error Levels” on page 106.

Sequenced Messaging

If you enable the time-sequencing feature, Syslog captures and forwards in timestamped order all event messages captured by entity filters on the router.

With time-sequencing disabled, Syslog forwards event messages to the remote hosts according to the order of slots polled on the router.

For instructions on how to enable the time-sequencing feature, see "Enabling Sequential Syslog Messaging" on page 108.

Note: Enable time sequencing only when it is important for your management workstation to receive router event messages in timestamped order. When you enable the time-sequencing feature, Syslog requires more processing resources from the router.

Viewing Event Messages from a Network Device

To view event messages from a Bay Networks router, open the file you designated on the workstation to receive Syslog messages from routers in your network.

For More UNIX Syslog Information

See the instructions provided in the UNIX manual (man) pages on your network management workstation for more information about Syslog, *syslogd*, and *syslog.conf*.

Configuring Syslog on the Router

The following steps describe generally how to configure Syslog on the router:

1. **Configure *syslogd* on a UNIX workstation.**
2. **Using the console attached to the router, or using a telnet connection to the router, log in to the Technician Interface.**
3. **Start the BCC and enter configuration mode.**
4. **Add Syslog to the router configuration.**
5. **Configure a remote host to receive Syslog messages from the router.**
6. **Configure entity filters for the new remote host.**
7. **Enable system auditing (box; access; audit state enabled).**
8. **Save your new router configuration to a file.**
9. **Exit your BCC session.**

Figure 18 shows the BCC configuration hierarchy for Syslog services on the router.

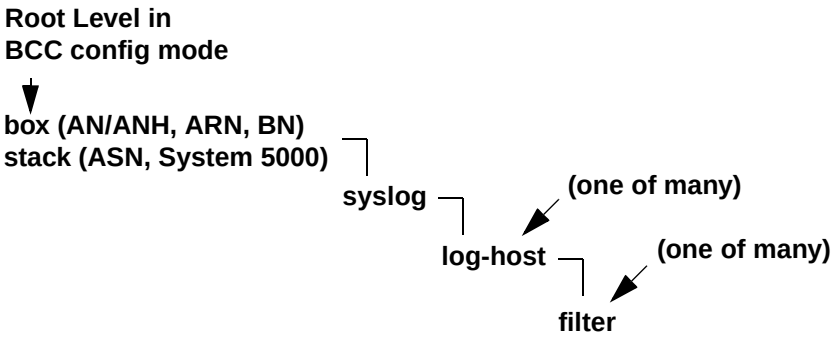


Figure 18. BCC Configuration Hierarchy for Syslog Services

The following sections describe each step in the Syslog configuration sequence.

Configuring syslogd on a UNIX Workstation

Before you configure and activate Syslog on any routers, configure *syslogd* on UNIX network management workstations in your network. This helps prevent the loss of event messages that you may want to capture as you begin to enable Syslog on each router.

For *syslogd* to properly dispatch event messages, you must edit the */etc/syslog.conf* file, in which you define destinations for the event messages.

Configure *syslogd* on your UNIX workstation, as follows:

1. **Log in as superuser:**

   su root

2. **Open the *syslog.conf* file and examine the facility level indicators, which are in the form local<*0 - 7*>.<*fault* | *warning* | *info* | *trace* | *debug*>.**

3. **Edit** *syslog.conf* **to accommodate message handling for your management workstation.**

4. **Save the changes you made to *syslog.conf*.**

5. **Obtain the process ID for the *syslogd* process currently running on the workstation by entering:**

   ps

6. **Reinitialize *syslogd* by entering:**

   kill -HUP *<process_id>*

Starting the BCC

To start the BCC interface, log in to the Technician Interface and enter the **bcc** command at the prompt:

```
Router1> bcc

     Welcome to the Bay Command Console!

     * To enter configuration mode, type config

     * To list all system commands, type ?

     * To exit the BCC, type exit


bcc>
```

If you need more information about how to log in to a Bay Networks router, see *Using Technician Interface Software*.

To enter BCC configuration mode, enter:

```
bcc> config
Reading configuration information, please wait . . . done.
box#
```

On AN®, ANH™, ARN™, and BN® routers, the BCC interface returns the root level prompt, `box#`, upon entering configuration mode. For ASN and System 5000™ routers, the root-level prompt in configuration mode is `stack#`.

Adding Syslog to the Router Configuration

To add Syslog services globally to the router configuration, enter:

```
box# syslog
syslog#
```

To enable Syslog services, you must configure at least one host to receive Syslog messages from the router, and at least one entity filter to capture messages for that host.

Configuring a Remote Host to Receive Router Syslog Messages

You must define which remote hosts you want to receive Syslog (event) messages from the router. To define a host, navigate to the **syslog** context and enter:

log-host address *<IP_address>*

IP_address is the address of the remote host to receive Syslog messages.

For example, to point the Syslog service to the remote host at IP address 192.168.3.4, enter:

```
box# syslog
syslog# log-host address 192.168.3.4
log-host/192.168.3.4#
```

You can point the Syslog service to additional remote hosts, up to the value configured for the Syslog maximum-hosts parameter. To increase or decrease the maximum number of hosts, refer to "Defining the Maximum Number of Remote Hosts" on page 106.

Creating Entity Filters for the Remote Host

After you define a remote host, you must configure at least one entity filter for it. Syslog messaging to that host cannot begin until you create this filter.

To create a filter for a remote host, navigate to the **log-host** context and enter:

filter name *<filter_name>* **entity** *<entity_name>*

filter_name is any name you want to assign to this filter.

entity_name is one of the BCC values for the entity parameter.

Example:

```
box# syslog
syslog# log-host address 192.168.3.4
log-host/192.168.3.4# filter name telnet-sessions entity telnet
filter/192.168.3.4/telnet-sessions#
```

You can configure up to 10 filters per remote host without changing configuration context. For each new filter, reenter the **filter** command with a unique name and any legal value for the entity parameter. To see a list of entity names to use, enter the following command:

```
log-host/192.168.3.7# filter name test entity ?
Legal values:
ace           ahb           all           aot           appn
arp           asr           async         at            atm
atm_dxi       atm_le        atm_sig       atmintf       bgp3
bgp4          bgp           bisync        bod           boot
. . .         . . .         . . .         . . .         . . .
. . .         . . .         . . .         . . .         . . .
. . .         . . .         . . .         . . .         . . .
tcp           telnet        tf            tftp          ti
ti_rui        tnc           token         topology      tty
vst           wcp           wep           x25           x25pad
xctl          xmodem        xns
```

After creating a filter, you need to identify the event numbers, event severity levels, and/or slots to use as filtering criteria. Go to the following sections for that information:

- "Filtering by Event Number" on page 97
- "Filtering by Event Severity Level" on page 98
- "Filtering by Slot Number" on page 100

Filtering by Event Number

Each event message generated by a router entity has a unique number. You can create an entity filter that captures only messages that fall within an event number range that you specify using the following filter parameters:

- event-lower-bound
- event-upper-bound

Syslog includes the upper and lower boundary values as part of this range.

For example, an entity filter for FTP has an event number range with a lower boundary of 5 and an upper boundary of 27. With this filter, Syslog captures and forwards to a remote host all FTP log messages with event numbers 5 to 27.

To filter by event number, navigate to the appropriate entity filter and enter:

event-lower-bound *<event_number>*

event-upper-bound *<event_number>*

event_number is the lowest-numbered event or the highest-numbered event in the range of events you want Syslog to capture.

Example:

```
box# syslog
syslog# log-host/192.168.125.3
log-host/192.168.3.4# filter name telnet-sessions entity telnet
filter/192.168.3.4/telnet-sessions# event-lower-bound 1
filter/192.168.3.4/telnet-sessions# event-upper-bound 52
filter/192.168.3.4/telnet-sessions#
```

To filter a single event, specify the same event number for the event-lower-bound and event-upper-bound parameters.

Accepting the default values for the event-lower-bound (0) and event-upper-bound (255) parameters causes Syslog to use only the severity and slot mask criteria for capturing and forwarding messages.

Filtering by Event Severity Level

Each event message generated by the router software has one of the following severity levels:

- Fault
- Warning
- Information
- Trace
- Debug

You can create an entity filter to capture only event messages that have the severity levels you specify. To create this type of filter:

- Specify a filter name.
- Specify an entity name.
- Set the event-lower-bound parameter to 0.
- Set the event-upper-bound parameter to 255 (the wildcard event number).
- Set the severity-mask parameter to one or more of the following: fault, warning, info, trace, debug.

For example, creating an entity filter for FTP with a message severity-mask value of **{warning fault info}**, captures only FTP event messages with a severity level of warning, fault, or information.

Note: Syslog checks the message severity mask only when you accept the default event message number range of 0 to 255. This causes Syslog to ignore event numbers as criteria for filtering messages.

To set the severity levels for capturing and forwarding event messages to a remote host, navigate to the appropriate filter context and enter:

severity-mask {all | none | <*level*>...}

all specifies all severity levels.

none specifies no severity levels.

level is one or more of the following:

fault

warning

info

trace

debug

Note: When specifying multiple severity levels (other than all), enclose the values in braces ({ }) and separate each value with a space.

Examples:

```
filter/192.168.3.4/telnet-sessions# severity-mask {trace}
filter/192.168.3.4/telnet-sessions# severity-mask {fault warning info}
filter/192.168.3.4/telnet-sessions# severity-mask {all}
```

Filtering by Slot Number

The router stores event messages in the log buffer associated with each slot. You can create an entity filter that captures only event messages logged on specified slots. To define a range of slot numbers for an entity filter, you specify values for the following filter parameters:

- slot-lower-bound
- slot-upper-bound

Syslog includes the upper and lower boundary numbers as part of the range. You must specify at least one slot in the range 1 to 14, where the slot numbers depend on the model of router.

Note: Since the slot-lower-bound and slot-upper-bound parameters each have a default value of 0, you must enter a valid, nonzero slot range or the filter will not become active.

For example, you can configure an entity filter for FTP with an event number range of 5 to 27 and a slot number range of 2 to 5. In this case, Syslog forwards to the remote host associated with this filter FTP log messages numbered 5 to 27 logged on slots 2 to 5 only.

You can configure a filter to select messages logged on a specific slot by setting the upper and lower slot boundary values to the same number.

To determine by slot numbers the event messages you want Syslog to capture and forward to a host, navigate to the appropriate filter context and enter:

slot-lower-bound *<slot_number>*

slot-upper-bound *<slot_number>*

slot_number is the lowest-numbered slot or the highest-numbered slot in the range of slots on which you want Syslog to capture event messages.

Example:

```
box# syslog
syslog# log-host/192.168.125.3
log-host/192.168.3.4# filter name telnet-sessions entity telnet
filter/192.168.3.4/telnet-sessions# slot-lower-bound 3
filter/192.168.3.4/telnet-sessions# slot-upper-bound 5
filter/192.168.3.4/telnet-sessions#
```

Note: Although the range for the slot lower and upper boundaries is 0 to 14, specify only values within the range of actual slot numbers for the router model you are configuring. Otherwise, the filter will not become active.

Saving the New Router Configuration to a File

After configuring Syslog, make sure to save the new router configuration. You can save the router configuration in one of two forms:

- As a binary file on an NVFS volume
- As an ASCII file that you import into the router configuration

To save your configuration as a bootable (binary) file on an NVFS volume, enter:

save config *<vol>*:*<filename>*

To save the configuration as an ASCII file, enter:

show config -all -file <*vol*:>:<*filename*>

To import the ASCII file into the router configuration, enter:

source *<vol>*:<*filename*>

Managing Syslog Services

Once you finish configuring Syslog on a router, you may occasionally need to:

- Stop or restart Syslog message forwarding to all remote hosts.
- Stop or restart Syslog message forwarding to a specific remote host.
- Disable or reenable a specific entity filter.
- Delete a remote host from the Syslog configuration.
- Delete an entity filter associated with a specific remote host.
- Delete Syslog services from the router.

Stopping or Restarting Syslog Messaging to All Hosts

You can stop Syslog messaging to all remote hosts by disabling Syslog services. Navigate to the **syslog** context and enter:

disable

Example:

```
box# syslog
syslog# disable
```

To confirm the change, check the current value of the state parameter by entering:

```
syslog# state
 state disabled
```

To restart Syslog messaging to all remote hosts, navigate to the **syslog** context and enter:

enable

Example:

```
box# syslog
syslog# enable
```

To confirm the change, check the current value of the state parameter by entering:

```
syslog# state
 state enabled
```

Stopping or Restarting Syslog Messaging to one Host

You can stop Syslog messaging to a specific host by disabling that host entry in the router configuration. Navigate to the appropriate **log-host** context and enter:

disable

Example:

```
box# syslog
syslog# log-host 192.168.3.4
log-host/192.168.3.4# disable
```

To confirm the change, check the current value of the state parameter by entering:

```
log-host/192.168.125.3# state
 state disabled
```

To restart Syslog messaging, navigate to the appropriate **log-host** context and enter:

enable

Example:

```
box# syslog
syslog# log-host 192.168.3.4
log-host/192.168.3.4# enable
```

To confirm the change, check the current value of the state parameter by entering:

```
log-host/192.168.3.4# state
 state enabled
```

Disabling and Reenabling a Filter

You can stop an entity filter from capturing event messages for its associated remote host. Navigate to the context of the appropriate **filter** object and enter:

disable

Example:

```
box# syslog
syslog# log-host 192.168.3.4
log-host/192.168.3.4# filter/192.168.3.4/telnet-sessions
filter/192.168.3.4/telnet-sessions# disable
```

To confirm the change, check the current value of the filter state parameter by entering:

```
filter/192.168.3.4/telnet-sessions# state
 state disabled
```

To restart Syslog messaging by a specific entity filter, navigate to that filter and enter:

enable

Example:

```
box# syslog
syslog# log-host 192.168.3.4
log-host/192.168.3.4# filter/192.168.3.4/telnet-sessions
filter/192.168.3.4/telnet-sessions# enable
```

To confirm the change, check the current value of the filter state parameter by entering:

```
filter/192.168.125.3/telnet-sessions# state
 state enabled
```

Deleting an Entity Filter from a Configured Host

To delete an entity filter from a configured host, navigate to the appropriate **filter** context and enter:

delete

Example:

```
box# syslog
syslog# log-host/192.168.3.4
log-host/192.168.3.4# filter/192.168.3.4/telnet-sessions
filter/192.168.3.4/telnet-sessions# delete
log-host/192.168.3.4#
```

Notice that the BCC prompt returns to the configuration context of the remote host associated with the filter.

Deleting a Configured Host and its Filters

To delete a specific remote host entry from the Syslog configuration, navigate to the appropriate **log-host** context and enter:

delete

Example:

```
log-host/192.168.3.4# delete
syslog#
```

Notice that the BCC prompt returns to the **syslog** configuration context. Deleting a remote host automatically deletes all entity filters configured for that host.

Deleting Syslog Services from the Router

To delete all Syslog services from the router, navigate to the **syslog** context and enter:

delete

Example:

```
box# syslog
syslog# delete
box#
```

Notice that the BCC prompt returns to root level, `box#` or `stack#`, depending on the device.

Customizing Syslog Operation

Many Syslog service parameters already have suitable default values. Depending on your specific requirements, you may want to customize settings associated with the following tasks:

- Mapping router event message severity levels to remote host (UNIX) system error levels
- Defining the maximum number of remote Syslog hosts known to the router
- Specifying the interval between polling cycles
- Identifying the system facility used by a specific UNIX host to receive and process Syslog messages from the router
- Enabling sequential Syslog messaging

Mapping Router Message Severity Levels to UNIX System Error Levels

In most cases, you can accept the default mapping between router event severity levels and UNIX system error levels established for a specific filter. However, you can customize these mappings by entering new values for the following parameters of any Syslog entity filter:

- fault-map
- warning-map
- info-map
- trace-map
- debug-map

To change the mapping between router event severity and UNIX system error levels, navigate to the appropriate filter context and enter:

{fault-map|warning-map|info-map|trace-map|debug-map} <*host_error_level*>

host_error_level is one of the following UNIX system error levels: emergency, alert, critical, error, warning, notice, info, or debug.

Example:

```
filter/192.168.3.4/telnet-sessions# warning-map warning
filter/192.168.3.4/telnet-sessions# info-map notice
filter/192.168.3.4/telnet-sessions# fault-map warning
filter/192.168.3.4/telnet-sessions# debug-map debug
filter/192.168.3.4/telnet-sessions#
```

Defining the Maximum Number of Remote Hosts

You can accept the default maximum number of remote hosts configurable on a device (5), or you can navigate to the router's **syslog** context and enter:

maximum-hosts <*maximum_hosts*>

maximum-hosts is the maximum number of remote hosts to allow.

Example:

```
box# syslog
syslog# maximum-hosts 3
```

Specifying the Interval Between Polling Cycles

Syslog polls the events log buffer on each slot to retrieve any new messages logged since the previous polling attempt. Syslog determines this interval by the value of its log-poll-timer parameter.

You can accept the default 5-second interval that Syslog waits to reinitiate a polling cycle across all slots, or you can navigate to the **syslog** context and enter:

log-poll-timer *<seconds>*

seconds specifies the interval between polling cycles.

Example:

```
box# syslog
syslog# log-poll-timer 7
```

Identifying a UNIX System Facility

The value of the log-facility parameter of any configured host determines which UNIX system facility (local0 through local7) receives Syslog messages from the device. You can accept the default setting (local7), or you can navigate to the context of the desired **log-host** object and enter:

log-facility *<system_facility>*

system_facility is one of the following:

local0
local1
local2
local3
local4
local5
local6
local7

Example:

```
box# syslog
syslog# log-host/192.168.3.4
log-host/192.168.3.4# log-facility local4
```

Enabling Sequential Syslog Messaging

Message time-sequencing allows Syslog to capture and forward router event messages in chronological order. Disabling this feature causes Syslog messages to be forwarded according to the polled sequence of slots. (In either case, the UDP transport may disrupt the sequence of messages received by the host.)

This feature is disabled by default, but you can enable Syslog message sequencing for a specific host. To enable Syslog message sequencing, navigate to the context of the desired **log-host** object and enter:

time-sequence enabled

Example:

```
box# syslog
syslog# log-host/192.168.125.3
log-host/192.168.125.3# time-sequence enabled
log-host/192.168.125.3#
```

Syslog show Commands

This section describes how to use the BCC **show** command to obtain Syslog statistical data from the management information base (MIB). The type and amount of data displayed depend on the specific BCC syntax you enter in each **show syslog** command. This section describes the following **show** commands:

Command	Page
show syslog base	108
show syslog log-host	109
show syslog filter	110

show syslog base

The **show syslog base** command displays statistics for the Syslog global entity. This command has no optional filters (flags).

The output of **show syslog base** includes the following information:

State	Configured state of the Syslog service
Maximum Active Hosts	Maximum number of remote Syslog hosts configured to receive messages from this device
Poll Iteration Timer	Number of seconds that Syslog waits to reinitiate a polling cycle across all slots
Operational State	Actual state of the Syslog service (up/down)
# Active Seq. Hosts	Number of hosts receiving time-sequenced Syslog messages from the router
# Active Non-seq. Hosts	Number of hosts receiving Syslog messages on a slot-by-slot basis from the router
# Messages Sent	Total number of Syslog messages forwarded to all remote Syslog hosts configured on this device

show syslog log-host

The **show syslog log-host** command displays statistics associated with any Syslog log-host object configured on the device.

This command supports the following command filters (flags) and filter arguments:

-log-host *<IP_address>*]	Displays statistics for all Syslog hosts configured on this device. Adding an IP address causes the command to display the statistics of a specific Syslog host.
-active	Displays the list of remote hosts configured and receiving Syslog messages from this router.
-inactive	Displays the list of remote hosts configured but not receiving Syslog messages from this router.
-enabled	Displays **log-host** objects that have a configured state of enabled.
-disabled	Displays **log-host** objects that have a configured state of disabled.

The output of the **show syslog log-host** command includes the following information:

Host IP Address	Address of a remote Syslog host.
Configured State	Administrative state of a configured **log-host** object.

Operational State	Actual (active/inactive) state of a configured **log-host** object. Active means that the associated host is actively receiving Syslog messages from the router. Inactive means that the host is not receiving Syslog messages from the router.
Time Sequencing	Status of Syslog message time-sequencing (enabled/disabled) for the associated remote host.
UDP Port	UDP port where the remote host receives Syslog messages from the router.
Facility Code	System facility that the remote UNIX host uses to receive and process Syslog messages from the router.
# Messages Sent	Total number of messages sent to the remote host.

show syslog filter

The **show syslog filter** command displays statistics of entity filters configured on the router.

This command supports the following command filters (flags) and filter arguments:

-log-host *<IP_address>*	Displays all filters configured for this remote host
-name *<log_host_name>*	Displays the filter with this name
-entity *<entity_name>*	Displays filters configured for this entity
-active	Displays filters in the active state
-inactive	Displays filters in the inactive state
-enabled	Displays filters with a configured state of enabled
-disabled	Displays filters with a configured state of disabled

The output of the **show syslog filter** command includes the following information:

Host IP Address	IP address of the remote host
Filter Name	Name assigned to the filter
Entity Name	Entity associated with the filter
Configured State	Administrative state of the filter
Operational State	Actual (active/inactive) state of the filter

Syslog Parameter Descriptions

Tables 3 through 5 describe parameters for the following BCC configurable objects:

- **syslog**
- **log-host**
- **filter**

Table 3. Syslog Parameters (box or stack > syslog)

Parameter	Function
log-poll-timer	Specifies the amount of time in seconds that Syslog waits before initiating another cycle to poll all slots for event messages logged since the previous polling cycle
maximum-hosts	Specifies the maximum number of remote hosts you can configure to receive messages from the Syslog service on the router
state	Specifies the administrative state of the Syslog service on the router (enabled or disabled). Before the Syslog service can actually begin filtering and forwarding messages, you must configure at least one remote Syslog host and at least one entity filter for that host.

Table 4. Parameters of log-host (box or stack > syslog > log-host)

Parameter	Function
address	REQUIRED -- Specifies the IP address of this remote host
log-facility	Specifies the system facility (local0 through local7) used by this remote host to receive Syslog messages from the router.
state	Enables or disables message forwarding to this host from the Syslog service
time-sequence	Enables or disables time-sequencing and forwarding of Syslog messages. Enabling this feature allows Syslog messages from different slots (router-wide) to be interleaved and forwarded sequentially. Disabling this feature causes Syslog messages to be forwarded according to the polled sequence of slots. (In both cases, the inherent unreliability of the UDP transport may disrupt the sequence of messages received by the host.)
udp-port	Specifies the UDP port of this host

Table 5. Parameters of filter (box or stack > syslog > log-host > filter)

Parameter	Function
debug-map	Maps router debug messages to an equivalent, host system error level: emergency, alert, critical, error, warning, notice, information, or debug.
entity	REQUIRED -- Specifies the router entity logging messages that Syslog will capture and forward to this filter's host
event-lower-bound	Specifies the lowest-numbered event in the range of events that Syslog will capture and forward to this filter's host. If you do not want to filter by event code, accept the default values for the event-lower-bound and event-upper-bound parameters. (This configures the wildcard event range of 0 to 255.) By accepting the wildcard range, Syslog ignores the event-lower-bound and event-upper-bound parameters and checks for filtering criteria based only on the value of the severity mask.
event-upper-bound	Specifies the highest-numbered event in the range of events that Syslog will capture and forward to this filter's host. If you do not want to filter by event code, accept the default values for the event-lower-bound and event-upper-bound parameters. (This configures the wildcard event range of 0 to 255.) By accepting the wildcard range, Syslog ignores this parameter and checks for filtering criteria based only on the value of the severity mask.
fault-map	Maps router fault messages to an equivalent, host system error level: emergency, alert, critical, error, warning, notice, information, or debug
info-map	Maps router info messages to an equivalent, host system error level: emergency, alert, critical, error, warning, notice, information, or debug
name	REQUIRED -- Specifies a unique alphanumeric name for this filter
severity-mask	Specifies the severity levels of router event messages -- warning, information, trace, fault, and debug -- that Syslog will capture and forward to this filter's host. Syslog uses this severity mask only if you specify the wildcard event number range (0 to 255) as values for the event-lower-bound and event-upper-bound parameters. If you specify a range of event numbers other than the wildcard range, Syslog ignores the severity-mask parameter.
slot-lower-bound	Specifies the lowest-numbered slot in the range of slots on which Syslog will capture and forward event messages to this filter's host
slot-upper-bound	Specifies the highest-numbered slot in the range of slots on which Syslog will capture and forward event messages to this filter's host
state	Specifies the administrative state of this filter (enabled or disabled)
trace-map	Maps router trace messages to an equivalent, host system error level: emergency, alert, critical, error, warning, notice, information, or debug
warning-map	Maps router warning messages to an equivalent, host system error level: emergency, alert, critical, error, warning, notice, information, or debug

Configuring Traffic Filters and Protocol Prioritization

The following sections are additions to *Configuring Traffic Filters and Protocol Prioritization.*

Sending Traffic Across HSSI and ATM Interfaces

You can now set the priorities for the traffic sent across a HSSI and ATM line interface using a process called protocol prioritization. Protocol prioritization enables you to prioritize traffic so that the router transmits traffic of with the highest priority first.

You must manually start protocol prioritization on a HSSI line interface.

You must manually start protocol prioritization on an ATM circuit. For ATM, you can use protocol prioritization for IP traffic travelling over an ATM PVC.

Enabling Protocol Prioritization on an ATM Circuit

The steps required to enable protocol prioritization for ATM differ from the steps for all other circuit types.

To enable protocol prioritization for an ATM circuit.

Site Manager Procedure	
You do this	**System responds**
1. In the Configuration Manager window, click on the ATM1 connector on which you want to configure protocol prioritization.	The Select Connection Type window opens.
2. Click on **ATM**.	The Edit ATM Connector window opens.
3. Click on **PVC Protocol Priority**.	The ATM PVC Protocol Priority window opens.
4. Click on **Priority Interface**.	The ATM Priority Interface List window opens.

From the ATM Priority List window, you can edit configuration parameters, as described in *Configuring Traffic Filters and Protocol Prioritization*.

Note: You cannot change the percent of bandwidth for the priority queues when configuring protocol prioritization over ATM.

For more information about protocol prioritization and how to configure and outbound traffic filter with a priority queue action, see *Configuring Traffic Filters and Protocol Prioritization*.

Configuring WAN Line Services

The following sections are additions to *Configuring WAN Line Services*.

Setting the Cable Type Using the BCC

If the synchronous interface is connected to a dial-up device for switched services, you can specify the cable interface type of the device that connects the dial unit. You can select one of the following cable types:

- Null
- RS232
- RS422
- V35
- X21

By default, the cable type is set to Null. If you start SDLC on your interface, the system sets the cable type to RS232.

Using BCC

To set the cable type, navigate to the serial prompt (for example, **box**; **serial/2/1**) and enter:

cable-type *<type>*

type is one of the following:

null
rs232
rs422
v35
x21

For example, the following command sets the cable type to V35:

```
serial/2/1# cable-type v35
```

Sending Traffic Across a HSSI Interface

You can now use Site Manager to set the priorities for the traffic sent across a HSSI line interface using a process called protocol prioritization. Protocol prioritization enables you to prioritize traffic so that the router transmits traffic of with the highest priority first.

You must manually start protocol prioritization on a HSSI line interface.

For information on how to configure protocol prioritization, see *Configuring Traffic Filters and Protocol Prioritization.*

Upgrading Routers to BayRS Version 13.xx

The following section is an amendment to *Upgrading Routers to BayRS Version 13.xx*. It replaces Table A-1 in Appendix A of the book.

Boot and Diagnostic PROM Upgrades for Version 13.20

Table 6 lists the routers that require a new version of boot and diagnostic PROMs for BayRS Version 13.20. Upgrade the PROMs if the features that you need depend on a PROM version more recent than the version now in your router.

Table 6. Version 13.20 Boot and Diagnostic PROM Revisions

Router Platform	Diagnostic PROM File Name	Diagnostic PROM Revision Number	Reason for Upgrading PROM	Boot PROM File Name	Boot PROM Revision Number
AN/ANH™	*andiag.exe*	v7.36	Modem Hang Fix	*anboot.exe*	9.00.d
AN200	*an200diag.exe*	v1.00	Strata flash feature support	*an200boot.exe*	11.01
ARE (BN, 5782 MPE)	arediag.pcc	v1.18	AMD29F040 Bit Flip Fix	areboot.ppc	13.20
ARN	arndiag.exe	v2.16	E7S feature support	arnboot.exe	1.25
ARN	arn.diag.rom	v2.16	E7S feature support	Not applicable	Not applicable
ARN	e7srom.rom	2.16	E7S feature support	Not applicable	Not applicable
ARN_PBDROM.ROM	arn_pbdrom.rom	v1.22	Not applicable	Not applicable	Not applicable
ASN	asndiag.exe	v2.34	Strata flash feature support	asnboot.exe	13.00
BN	*frediag.exe*	v5.14	Strata flash feature support	*freboot.exe*	13.00
BN	*fre4diag.pcc*	v1.10	FRE-4 board support	*fre4boot.ppc*	13.20
System 5000™ net modules	*s5000diag.exe*	v0.04	Strata flash feature support	*s5000boot.exe*	13.00

Using Technician Interface Software

The following sections are additions to *Using Technician Interface Software*.

Monitoring EIA Signals

You can monitor Electronic Industries Association (EIA) signals on the serial ports of Bay Networks AN, ARN, ASN™, and BN routers. You can monitor request to send (RTS), clear to send (CTS), data send ready (DSR), data terminal ready (DTR), and data carrier detect (DCD) signals on any serial port including RS-232-C, RS-422, and V.35 interfaces.

Note: Only the true status of the EIA signals at the serial port are monitored. The signals displayed are not interpreted based on the cable type. For cable types other than straight-through, such as crossover cables, you must interpret the signals.

You monitor EIA signals using the **show** command of the Technician Interface. See *Using Technician Interface Software* for more information.

Using the Technician Interface

Use the Technician Interface command **show sync eia_status** to monitor EIA signals on a specific serial port. An active signal is displayed as “H,” an inactive signal is displayed as “L.”

Example

```
[1:1]$ show sync eia_status
Slot   Conn   Circuit RTS    CTS    DSR    DCD    DTR
------ ------ ------  ------ ------ ------ ------ ------
1      2      S11     H      L      L      H      L
1 entry(s) found
```